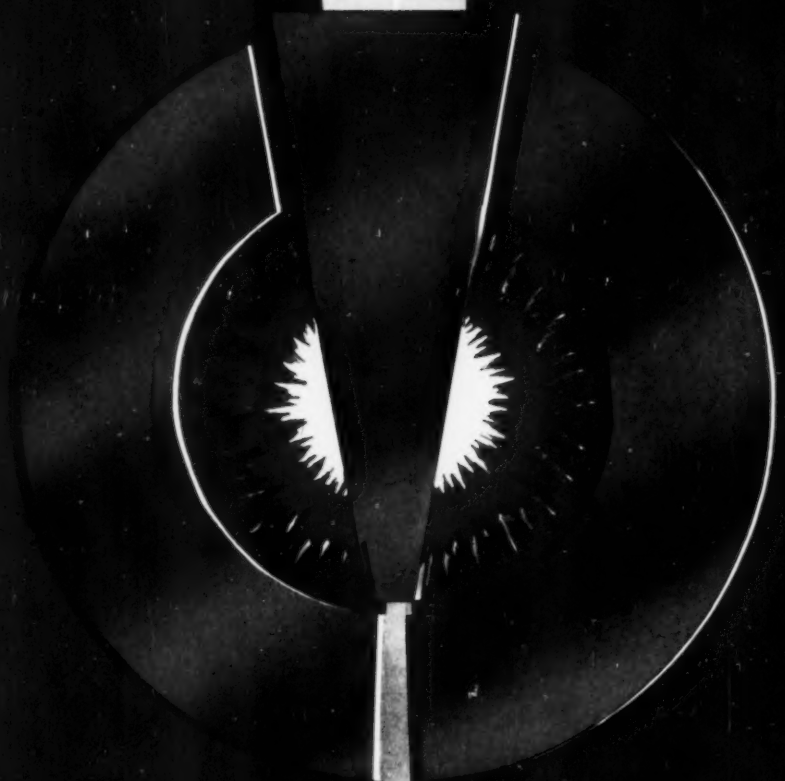
AUTOMOTIVE INDUSTRIES

RCH 15, 1



A CHILTON PUBLICATION

KEEP YOUR PRECISION UNDER LOCK AND KEY!

On the New Heald machines you can lock your set-up as easily as you lock your car

There's nothing new about a lock. But there's a brand new advantage in being able to use locks on controls set for precision finishing equipment. Here's how the new Heald Bore-Matic and Grinders make it possible.

Simply dial your machine set-up on any new Heald machine, then turn the key—and forget about making the usual compensating adjustments for temperature rises and consequent changes in oil viscosity. Your precision is literally under lock and key. Such an achievement has been made possible by several new Heald line features. Heat generating pumps and motors are isolated from the machine base, pump motors are fan cooled and bridges are cored out to allow heat to dissipate itself. On top of all this heat prevention, any temperature rise which does occur is effectively nullified by the new Heald constant feed hydraulic system of regulating flow of oil. This means your set-up stays "put" where you want it, and, better still, this means completely controlled production in quality and quantity as well.

Ask your nearest Heald representative to give you further details on this time-saving, labor-saving, money-saving feature.

All new Heald Grinders and Bore-Matics include the features which enable you to lock your cycle settings and assume maximum control over precision, production and uniformity.

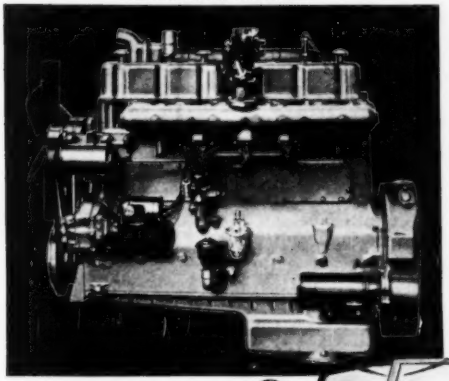
HEALD

THE HEALD MACHINE COMPANY, Worcester 6, Mass.

Branch Offices in Chicago • Cleveland • Dayton • Detroit • Indianapolis • Lansing • New York

on time... in time!

WAUKESHA Model 145-GKB High Output FIRE ENGINE SPECIAL
Six cylinders, 5¼-in. bore x 6-in. stroke, 779 cu. in. displacement; develops 240 hp. at 2400 rpm.



• When Dallas, Texas firemen come rushing up to any home, office or factory . . . it's a business call. Protection of life and property is their business. And they are more than particular about arriving on time and *in time.*

They do! There's a Waukesha Engine in fire trucks like this.

It's a combination 1000-gallon pumper, hose and chemical truck made by the Ahrens-Fox Fire Engine Co., Cincinnati, Ohio. And it's powered by a Waukesha Fire Engine Special, 145-GKB High Output Model, developing 240 hp. at 2400 rpm.

This is a six-cylinder valve-in-head type engine . . . and being a Waukesha and specially designed for fire engines, you'd expect the most modern features.

This High Output model has 'em all—including . . . fully counter balanced 3½-inch, 7-bearing crankshaft . . . twin ignition . . . torsional vibration dampener . . . down draft carburetion . . . crankcase ventilation . . . overhead valves with Stellite seats . . . removable, hardened, wet sleeve cylinders . . . aluminum pistons . . . and is arranged for full electrical equipment and all modern accessories.

Want the whole story? Send for Bulletin 1402.

WAUKESHA MOTOR COMPANY, • WAUKESHA, WIS.
NEW YORK • TULSA • LOS ANGELES

WAUKESHA ENGINES

SEND FOR FREE CIRCULARS

MATTISON

HIGH-POWERED PRECISION SURFACE GRINDERS

● Rugged, High Powered and Versatile, Mattison Precision Surface Grinders with double-column construction are built to handle your grinding jobs on a real production basis, providing repeated precision results and a fine finish.
They are built with table sizes from 12" to 36" wide by 36" to 192" long.

WIDE ABRASIVE-BELT GRINDING and POLISHING MACHINE

● From the time factory coated abrasives were introduced for metal polishing and grinding, Mattisons have developed and built machines properly applying belts to do the job to be done. The Wide-Belt Sheet Grinder and Polisher shown above is for finishing stainless steel and alloy sheets in sizes up to six feet wide and sixteen feet long.

MATTISON MACHINE WORKS
ROCKFORD · ILLINOIS

AUTOMOTIVE INDUSTRIES

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TOUREK
BALL JOINTS
AND
SCREW MACHINE PRODUCTS

Many manufacturers find that in Tourek's wide range of standard Ball Joints there is a type and size which meets their exact requirements. You, too, can simplify the design and improve the performance, as well as reduce the cost of your products by specifying standard Tourek Ball Joints . . . Our large stock assures prompt delivery.

BALL JOINTS

Or, if you are planning a new product calling for special Ball Joint design, call upon Tourek for experienced advice.

Write for Tourek's 16-page illustrated catalog, containing complete specifications on 12 standard types in 54 sizes, as well as data on special types.

Your screw machine product requirements, when produced at Tourek, are the result of coordinated engineering know-how, the latest in modern high-speed 6-spindle automatics, skilled operators, plus 28 years of experience.

SCREW MACHINE PRODUCTS

Your production parts, from 1/16" to 2⅜" are made with the utmost precision and delivery is assured according to schedule.

An inquiry on your screw machine product needs is invited. Send a blueprint or sample for quotation.

J. J. TOUREK MFG. CO.
4701 W. 16th St., Chicago 50, Ill.

MAKERS OF QUALITY SCREW MACHINE PRODUCTS

ESTABLISHED 1920
TOUREK
FAMOUS BALL JOINTS

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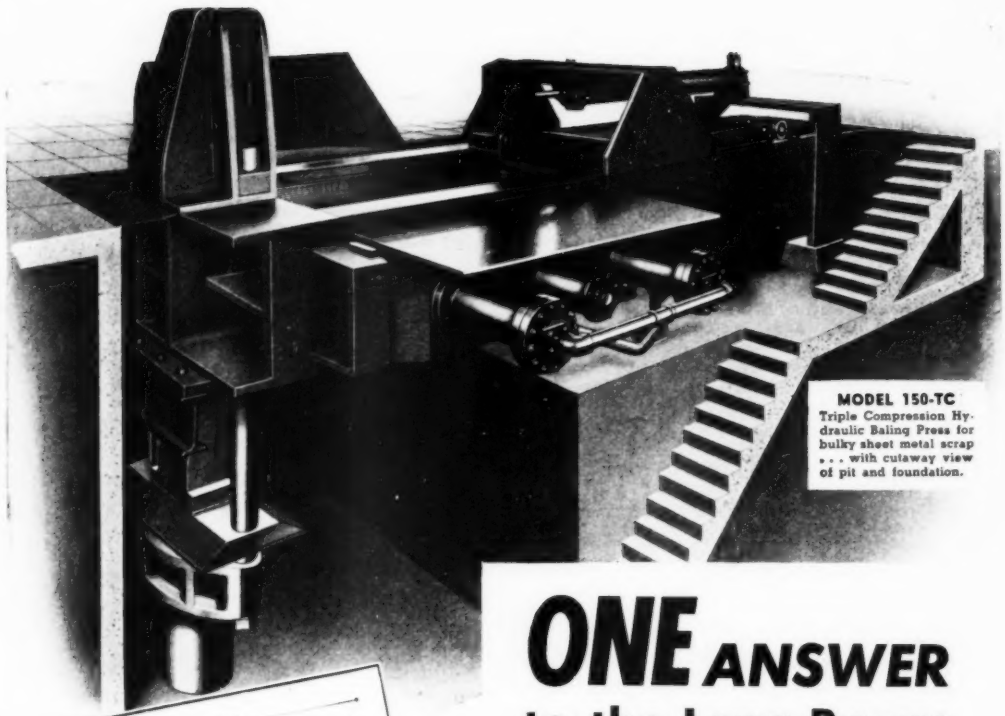

MODEL 150-TC
Triple Compression Hydraulic Baling Press for bulky sheet metal scrap . . . with cutaway view of pit and foundation.

ONE ANSWER to the Long-Range Scrap Shortage

Proper classification and baling of all available sheet metal scrap can go a long way toward relieving the long-range scrap shortage. Reduced to dense, compact bales of proper size — sheet metal scrap is extremely valuable raw material for the steel mills.

You can contribute to the *continued expansion* of iron- and steel-making capacity by planning *now* for *future baling* of your sheet metal scrap. At the same time, you can reap the benefits of a most profitable operation in your plant.

NEWS OF INDUSTRY

Long-Term Scrap Shortage Seen As Bar To Huge Steel Expansion

It is estimated that only about a fourth of the 20 million gross tons of the scrap bought by steel mills last year was industrial scrap —that generated in industry as a waste product of steel fabricating. This leaves almost 15 million tons of purchased scrap that originated because things wore out or became obsolete. Of this about 2 million

Reprinted from The Iron Age of June 10, 1948

GALLAND-HENNING MFG. CO.
2747 S. 31st STREET MILWAUKEE 7, WISCONSIN

GALLAND-HENNING

SCRAP METAL BALING PRESSES

A 5473-1P

ONE OF THE RESOURCES BEHIND A UNIQUE POLICY

WHY DO SOME PISTON RINGS WEAR TIN COATS?

To improve their appearance, for one thing. But more importantly, tin coating assures quick break-in, reduced scuffing, added protection.

Tin coating and other methods of processing large numbers of piston rings present complex problems. In a view, above, of Muskegon's Plating Department, racks of tin coated piston rings, having been plated and rinsed, are seen emerging from the continuous drying ovens for visual inspection.

Facilities for all types of plating and chemical coatings are but one of the rich resources, in both plant and personnel, that stand behind Muskegon's *unique policy*.

Policy

"It is Muskegon's firmly established policy to sell exclusively to manufacturers (1) for installation as original equipment and (2) for resale for service purposes."

MUSKEGON Piston Rings

MUSKEGON PISTON RING CO.
MUSKEGON, MICHIGAN
PLANTS AT MUSKEGON AND SPARTA

"THE ENGINE BUILDERS' SOURCE"

Sweet music for better automotive tubing

It's sweet music when automotive manufacturers hear *all* the advantages of Bundyweld* Tubing for fuel lines, hydraulic brake line systems and pressure lines.

So strong, so sturdy that it's already used in 95% of today's cars, Bundyweld takes vibration, shock, and pressure year after year, in gasoline- and Diesel-engined vehicles.

Double-walled from a single strip, bonded throughout, Bundyweld is lightweight, ductile . . . leakproof, too . . . and can be bent without fear of collapsing or weakening structurally. Held to close tolerances, it is easy to fabricate . . . cuts production time, lowers production expense.

Check this outstanding tubing for your tubing needs. Contact your nearest Bundy representative listed below. Or, write direct to: *Bundy Tubing Company, Detroit 14, Michigan.*

BUNDY TUBING

ENGINEERED TO YOUR EXPECTATIONS

* REG. U.S. PAT. OFF.

WHY BUNDYWELD IS BETTER TUBING

1 Bundyweld Tubing, made by a patented process, is entirely different from any other tubing. It starts as a single strip of basic metal, coated with a bonding metal.

2 This strip is continuously rolled twice laterally into tubular form. Walls of uniform thickness and concentricity are assured by close-tolerance, cold-rolled strip.

3 Next, a heating process fuses bonding metal to basic metal. Cooled, the double walls have become a strong ductile tube, free from scale, held to close dimensions.

4 Bundyweld comes in standard sizes, up to ⅝" O.D., in steel (copper or tin coated), Monel or nickel. For tubing of other sizes or metals, call or write Bundy.

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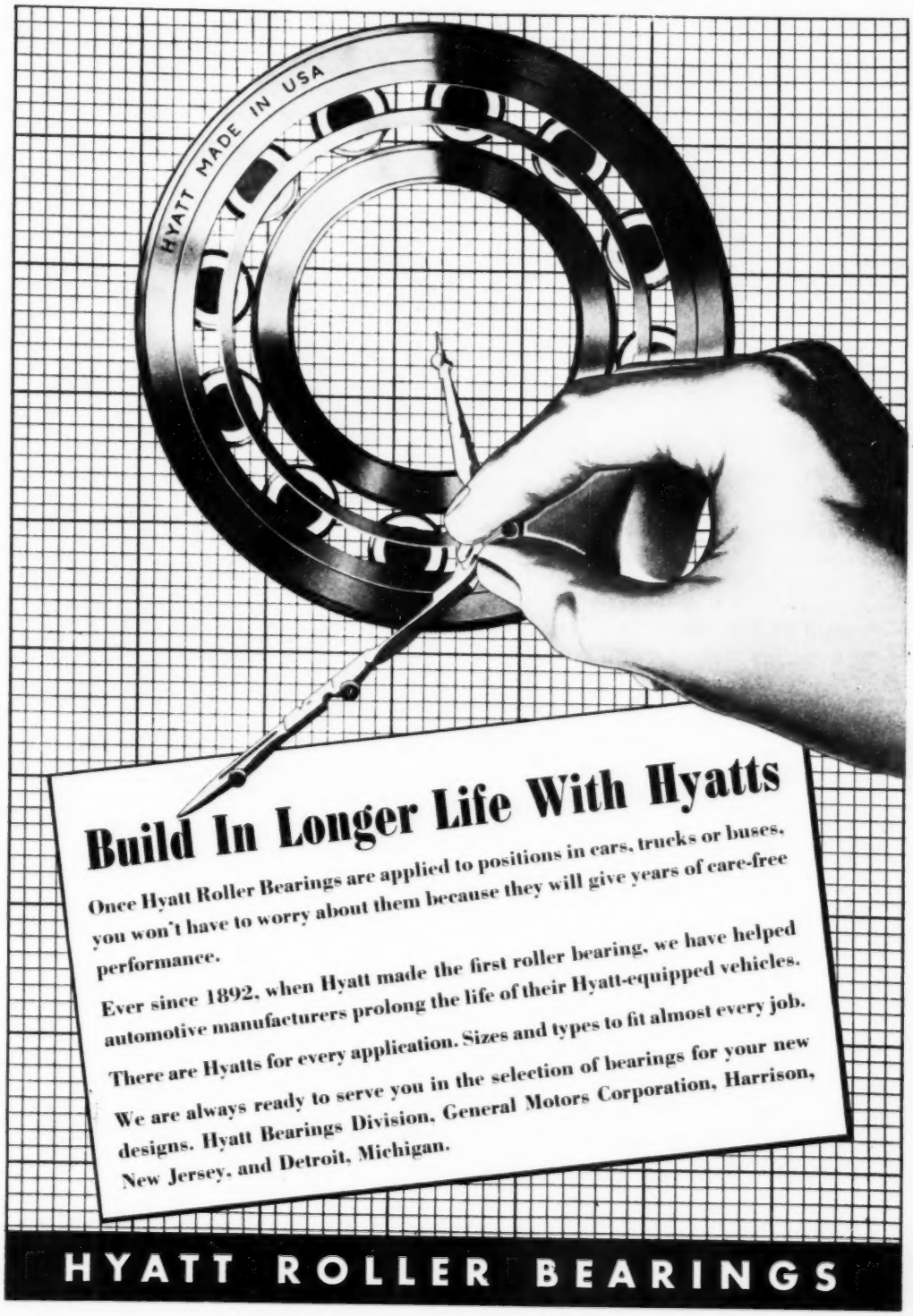


Build In Longer Life With Hyatts

Once Hyatt Roller Bearings are applied to positions in cars, trucks or buses, you won't have to worry about them because they will give years of care-free performance.

Ever since 1892, when Hyatt made the first roller bearing, we have helped automotive manufacturers prolong the life of their Hyatt-equipped vehicles.

There are Hyatts for every application. Sizes and types to fit almost every job.

We are always ready to serve you in the selection of bearings for your new designs. Hyatt Bearings Division, General Motors Corporation, Harrison, New Jersey, and Detroit, Michigan.

HYATT ROLLER BEARINGS

Can you take advantage of this REAL ECONOMY?

THIS 2" TURRET LATHE

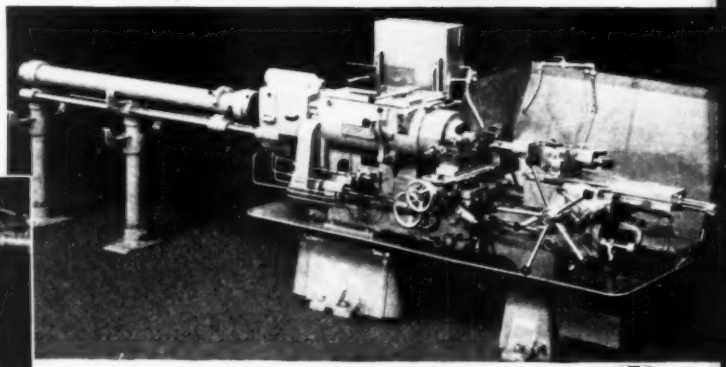
HAS 4½" COLLET CAPACITY for tubing, plastics and lightweight bar stock

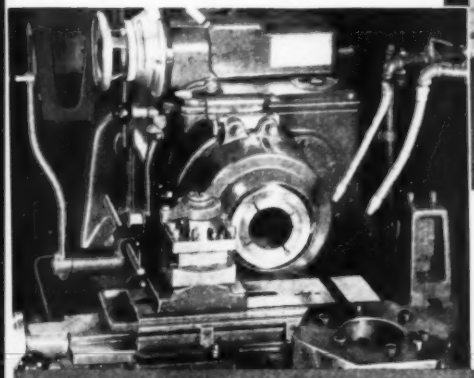
GISHOLT No. 4 UNIVERSAL RAM TYPE TURRET LATHE

You don't have to invest in expensive heavy-duty lathes to handle large diameter work of this nature. Here is the ideal lathe to machine tubing, plastics, or lightweight bar stock such as aluminum. You can use it for softer metals like brass, too.

The Gisholt No. 4 Ram-Type Turret Lathe (normally 2" bar capacity) can be furnished with a larger spindle bore providing 4½" round collet capacity. This machine gives you all the modern operating advantages which mean high speed production and low costs. It may be the economical solution to your problem. Ask your nearest Gisholt representative about it. Or write us for complete information.

GISHOLT MACHINE COMPANY
Madison 10, Wisconsin





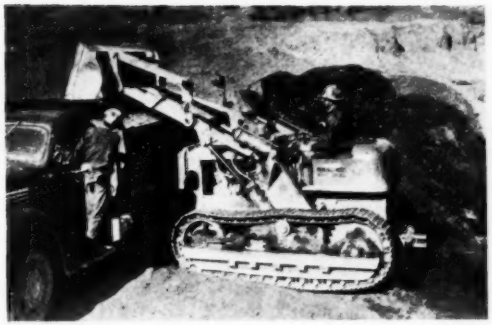
The Gisholt No. 4 Ram-Type Turret Lathe with 4½" round collet capacity and equipped with 4½" bar feed. (At left) Close-up view of 4½" capacity collet chuck. This machine is ideal for large diameter tubing.

THE GISHOLT ROUND TABLE represents the collective experience of specialists in machining, surface-finishing and balancing of round and partly round parts. Your problems are welcomed here.

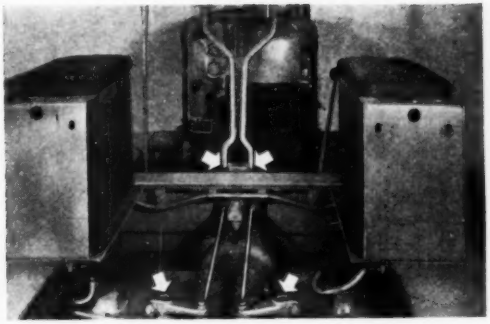
GISHOLT

TURRET LATHES · AUTOMATIC LATHES · SUPERFINISHERS · BALANCERS · SPECIAL MACHINES

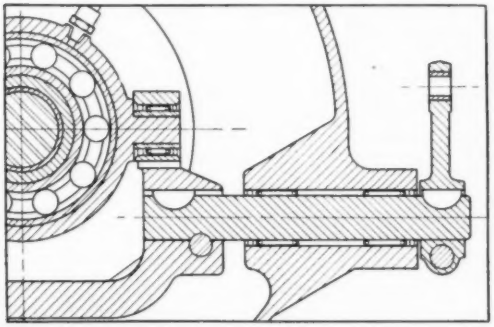
Torrington Needle Bearings Help Make Allis-Chalmers HD-5 Diesel Tractors Easier to Operate and Maintain



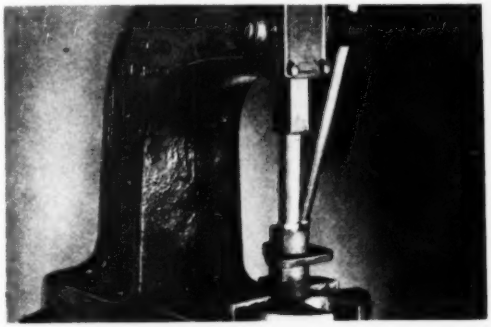
The HD-5 Diesel Tractor is a smaller machine built by Allis-Chalmers Manufacturing Company with big tractor stamina and performance. Among features assuring easy operation and maintenance are 15 Torrington Needle Bearings.



Steering effort is reduced, for example, by the smooth operation of efficient Needle Bearings in the steering clutch controls. Two Needle Bearings are used on each operating lever, and two on each intermediate lever shaft.

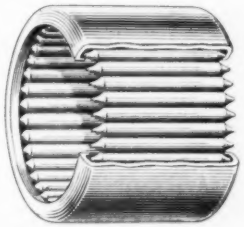


Unusually compact design of the engine clutch control is secured with seven Needle Bearings, three of which are shown in the cross-section above. Grease-packed at assembly, Needle Bearings need little further attention.



Easy installation by a simple arbor press operation is a Needle Bearing feature that helps keep assembly costs low. The design of these compact units also simplifies fabrication and assembly of related parts.

You too, can secure smooth operation and low maintenance costs, with economies in production, by using Torrington Needle Bearings. Let our engineers help you to adapt them to your product requirements. Call or write us today. THE TORRINGTON COMPANY, Torrington, Conn., or South Bend 21, Ind. District offices and distributors in principal cities.



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Needle • Spherical Roller • Tapered Roller

Straight Roller • Ball • Needle Rollers

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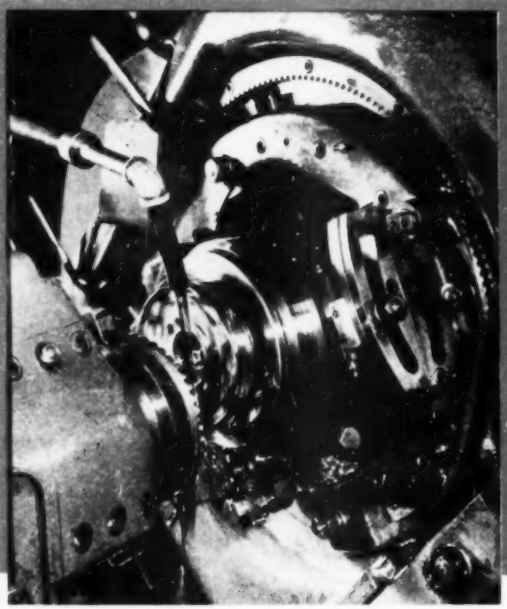

Texaco cutting coolants help you cut faster, at lower cost, with smoother finish

IT makes no difference whether you machine steel, copper, aluminum, brass or any other metal . . . there is a *Texaco Cutting, Grinding or Soluble Oil* to help you do the job faster, cleaner and at lower cost.

Texaco Cutting, Grinding and Soluble Oils effectively lubricate work and tool — keep them cool and prevent chip welding or wheel loading. Thus, you get more cuts per tool grind, finer finish, fewer rejects — better machining whatever the metal or cutting method.

Let a Texaco Lubrication Engineer who specializes in cutting coolants advise you which Texaco oil to use for best results.

Just call the nearest of the more than 2300 Texaco Wholesale Distributing Plants in the 48 States, or write The Texas Company, 135 East 42nd Street, New York 17, N. Y.

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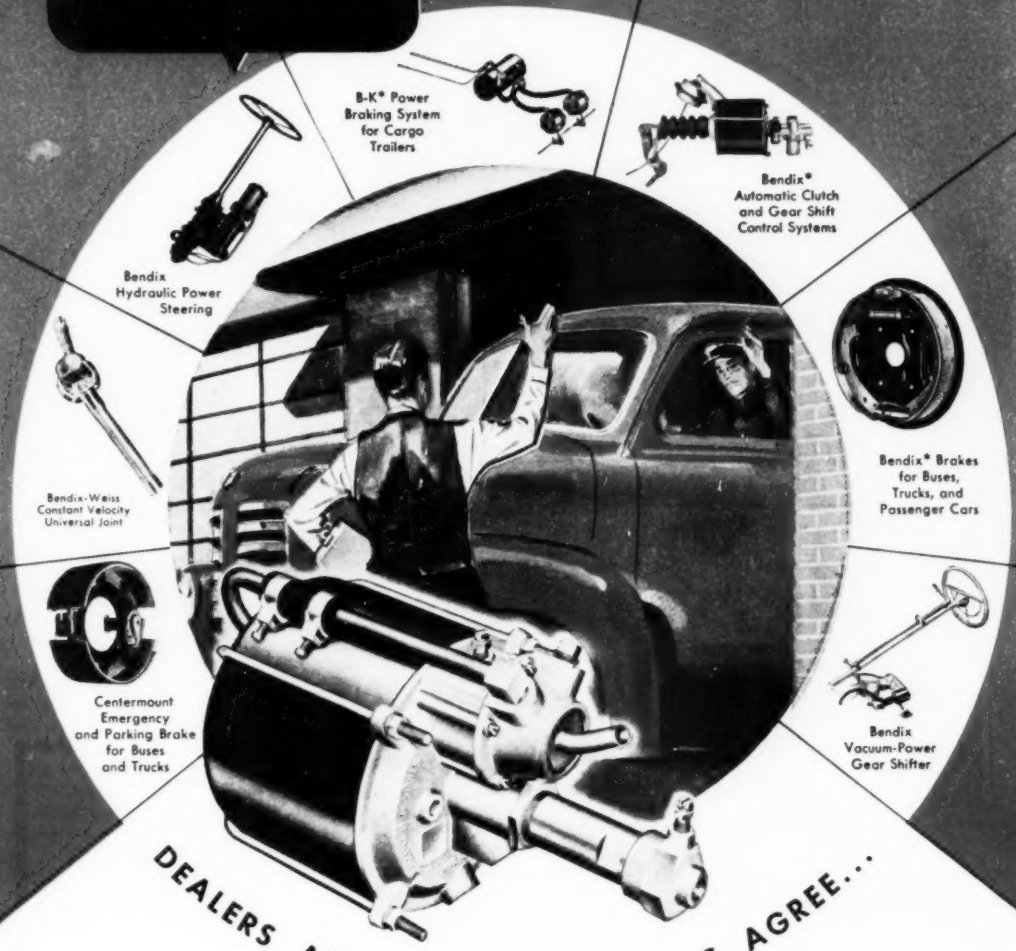
BUILDERS OF THE BASICS OF

BETTER MOTOR VEHICLES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Everything truck operators look for in power braking, they find in greater degree and for less cost in the Bendix Hydrovac*. It gives them easier, smoother, quicker stops with less physical effort. A record number of Hydrovac installations—over 2,000,000 at present—bears out this claim. Ask the man who uses Hydrovac about its performance . . . ask the man who services it about the upkeep . . . and you'll see why Hydrovac is first choice! This preference indicates the value of including Bendix Hydrovac power braking in your original equipment specifications.

*REG. U. S. PAT. OFF.

BENDIX PRODUCTS DIVISION of
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Bendix
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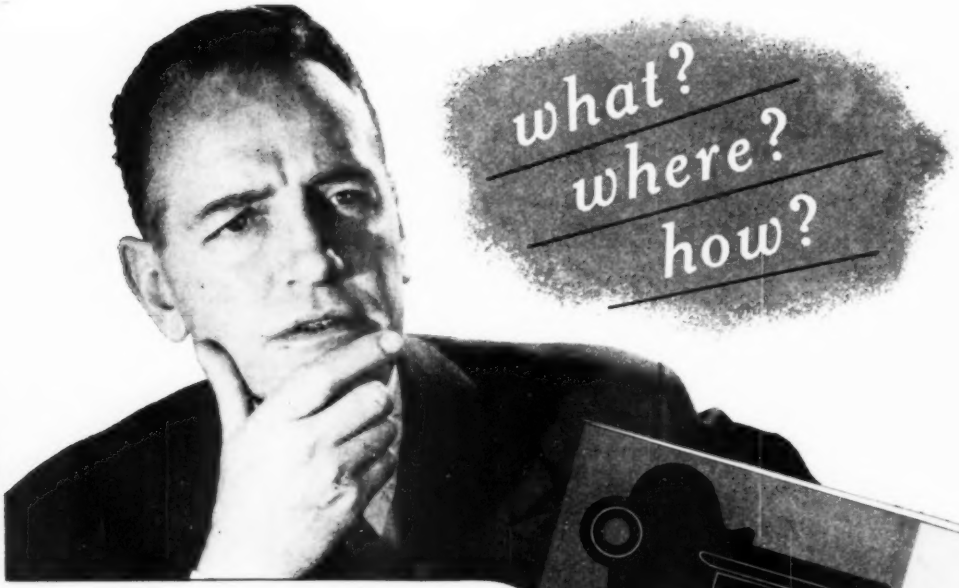

what?
where?
how?

maybe this Folder will give you the answer

● If the problem has to do with transmitting reciprocal action from one place to another, TRU-LAY Push-Pull very likely is the answer. Read these highlight facts about TRU-LAY Push-Pull.

It . . .

- . . . *is as positive in action as a steel rod, yet flexible as wire rope*
- . . . *will operate over long or short lengths, with few or numerous bends*
- . . . *will operate while flexing*
- . . . *is made in capacities up to 1000 pounds input*
- . . . *is precision-made, assuring minimum backlash and long life*

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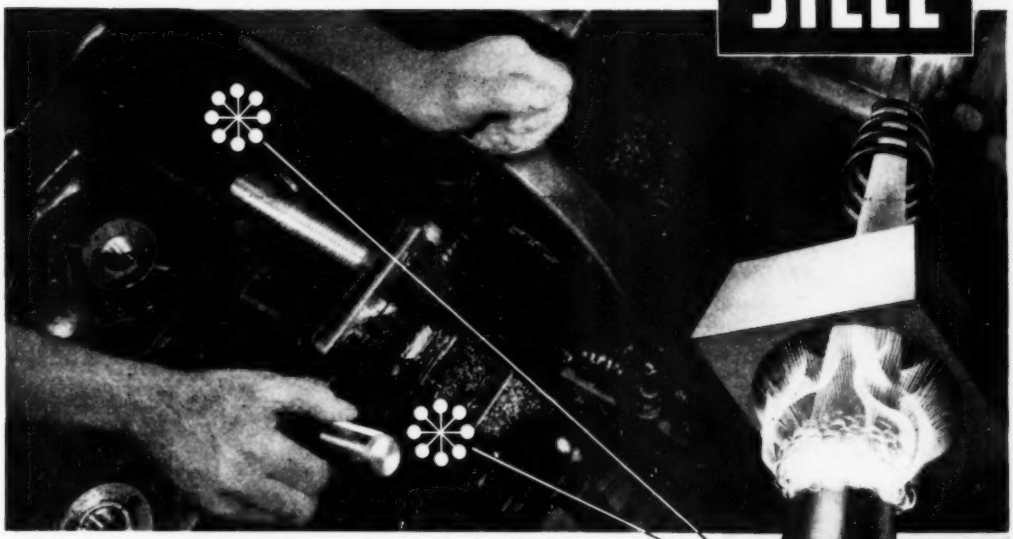
AUTOMOTIVE AND AIRCRAFT DIVISION
AMERICAN CHAIN & CABLE

TRADE MARK

In Business for Your Safety

Lundberg Screw Products Co. makes *better* studs *at lower cost* with J&L ELECTREAT COLD-FINISHED STEEL BARS

J&L STEEL



Cutting precision threads on J&L Electreat Steel with a two-spindle threader at Lundberg Screw Products Co., Lansing, Mich.

Steel costs are reduced 20% to 30% . . . Heat treating of finished studs is eliminated.

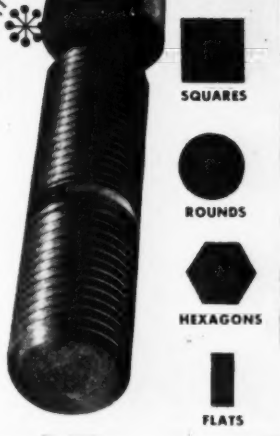
Steel studs made by Lundberg for such equipment as truck axles, farm implements and diesel locomotives, must be made to exact specifications.

By using J&L *Electreat* cold-finished bars to replace higher-cost alloys, such as chrome-molybdenum and chrome-nickel-molybdenum, Lundberg not only meets the customer's specifications but also obtains *two savings: Steel costs are reduced*, and *the nuisance and expense of heat treating is eliminated.*

In addition—finished studs are of better quality. They are free from scale and distortion caused by "batch" heat treating. They have clean, sharp threads. Inspection rejects are reduced.

Each bar of J&L *Electreat* cold-finished steel is individually heat treated at the mill by the electric-induction process under exacting control. The flexibility of heat control in the Electreat process permits "tailor-made" combinations of surface and core properties to fit *your* requirements.

Many fabricators of gears, couplings, bolts, nuts, shafts and other steel parts take advantage of these money-saving qualities of J&L *Electreat.* The booklet, "*New* J&L *Electreat* Heat-Treated, Cold-Finished Steel," compares the properties obtained by the Electreat process with conventional "batch" heat-treatment and points the way to greater profits. Let us send you a copy.



Jones & Laughlin Steel Corporation
430 Jones & Laughlin Building
Pittsburgh 19, Pennsylvania

Please send me a copy of "*New* J&L *Electreat* Heat-Treated, Cold-Finished Steel."

Do you recommend Electreat for:

NAME_____

COMPANY NAME_____

ADDRESS_____

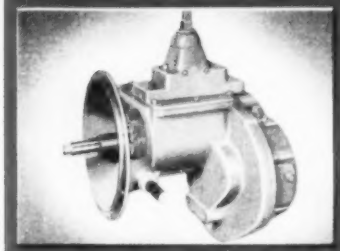
JONES & LAUGHLIN STEEL CORPORATION

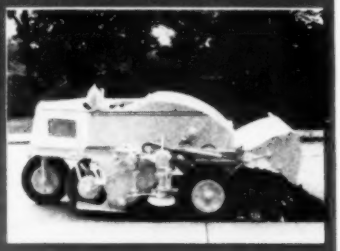
From its own raw materials, J&L manufactures a full line of carbon steel products, as well as certain products in OTISCOLOY *and* JALLOY *(hi-tensile steels).*

PRINCIPAL PRODUCTS: HOT ROLLED AND COLD FINISHED BARS AND SHAPES • STRUCTURAL SHAPES • HOT AND COLD ROLLED STRIP AND SHEETS • TUBULAR, WIRE AND TIN MILL PRODUCTS • "PRECISIONBILT" WIRE ROPE • COAL CHEMICALS

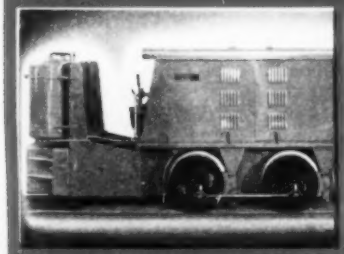
Engineered TO ORDER

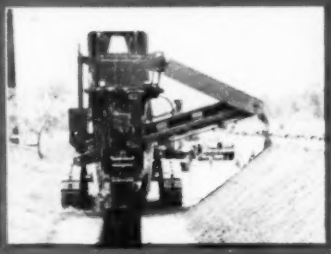
Heavy-duty loads . . . gruelling wear . . . continuous day-and-night operation . . . these are old stories to COTTA "Engineered-To-Order" Transmissions . . .

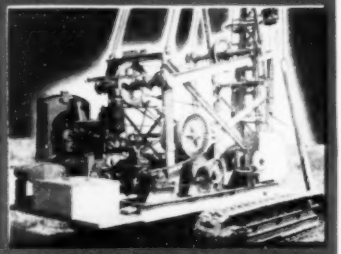




For over 30 years our engineering staff has taken in stride those so called "impossible" jobs . . . custom-designing power transmissions to fit available space.







. . . jobs that ordinary gear-boxes can't handle! If you can't get what you need in transmission performance from ordinary sources, come to COTTA!

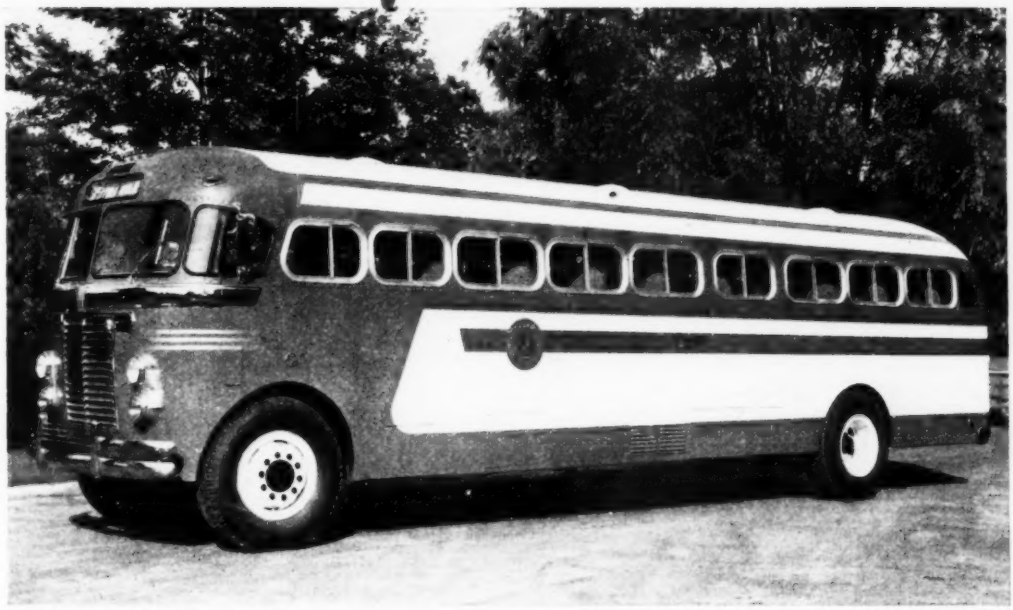
FREE BROCHURE illustrating more than 20 installations of transmissions Engineered-To-Order by COTTA. Send for it today.

An Assurance of Dependable Service

COTTA
HEAVY-DUTY
TRANSMISSIONS

WRITE FOR FREE BROCHURE: COTTA TRANSMISSION CO., ROCKFORD, ILLINOIS

Steering AT ITS BEST



FITZJOHN SUPER-POWER DURALINER

ROSS BRINGS EASE . . . AND ECONOMY

GREATER CAPACITY, and more power, are emphasized in the new Super-Power Duraliner, product of the Fitzjohn Coach Company of Muskegon, Michigan. Distinguished appearance and passenger-comfort are likewise outstanding characteristics. And Ross supplies the good steering.

Experience gained through the use of Ross steering gears on military vehicles during world war II has led to current improvements in Ross design, resulting in:

(1) ***Increased mechanical reduction*** . . . (2) ***More compactness of design*** . . . (3) ***Reduction in weight*** . . . (4) ***Greater arm angular-travel*** . . . (5) ***Improved metallurgy*** . . . (6) ***Increased efficiency.***

Throughout 42 years of leadership in this industry, Ross gears have been distinguished for long life, simplicity of adjustment and maintenance of long-recognized qualities of safety, stability and performance. We invite discussion of any steering problem.

Ross

Cam & Lever ***STEERING***

ROSS GEAR AND TOOL COMPANY • LAFAYETTE, INDIANA

where can this seal give you better service?

Available from stock for shaft diameters from .250" to 8.703"

VICTOPRENE Type "W"
(NARROW WIDTH)

How Victor Seal-ology gives the right answer

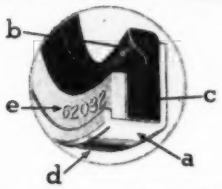
For one application, this Victoprene Type "W" seal may be the best. For another, it may not be suitable at all. Where to specify it? Seal-ology can help you decide correctly.

Seal-ology, as developed in Victor Research Laboratories, is the most scientific method of pre-determining oil seal performance. Step by step, it gives recognition to all factors of application in their logical order. Then it carefully provides for each condition in proper balance.

In the net result, Seal-ology combines the most efficient materials and construction for your specific application.

MAXIMUM RECOMMENDED OPERATING LIMITS

Shaft Surface Speed	1,000 f.p.m.
Operating Pressure	30 p.s.i.
Shaft Surface Finish	5 to 25 Micro Inches
Shaft Surface Hardness	Minimum 30 Rockwell C Scale
Shaft Eccentricity	.005 in. T.I.R.
Shaft Diameter Tolerance	.002 in.
Temperatures: Continuous Operation	200 deg. F.
Intermittent Operation	225 deg. F.
Shaft Movement	Rotation, Oscillation, Reciprocation



a Designed to narrow width, fits easily where space is limited axially or radially.

b Sealing element is Victoprene synthetic rubber elastomer, highly resistant to lubricants, heat, aging.

c Sealing element section, heavier than usual, is molded to shape and bonded to metal washer. Holds higher pressures than spring-loaded seals.

d Centerless grinding of outer periphery assures truly circular case and accurate press fit with bore.

e Permanent identification with catalog number makes replacement easier.

Write for Engineering Catalog No. 304

For standard uses, Victor offers a wide selection of Seal-ology-proved Victoprene seals. Write on your letterhead for Catalog 304 which includes complete technical data. No obligation.

When you need oil seals, gaskets, or packings, look first to Victor—leader in sealing products research and manufacturing. The Victor engineer in your territory is always at your service.

Victor Mfg. & Gasket Co., P. O. Box 1333
Chicago 90, Illinois
and its affiliate, Victor Sealing Products Co., Inc.

Other Types in the Victoprene Line

Manufacturers of **SEALING PRODUCTS** *Exclusively*

VICTOR
GASKETS • OIL SEALS

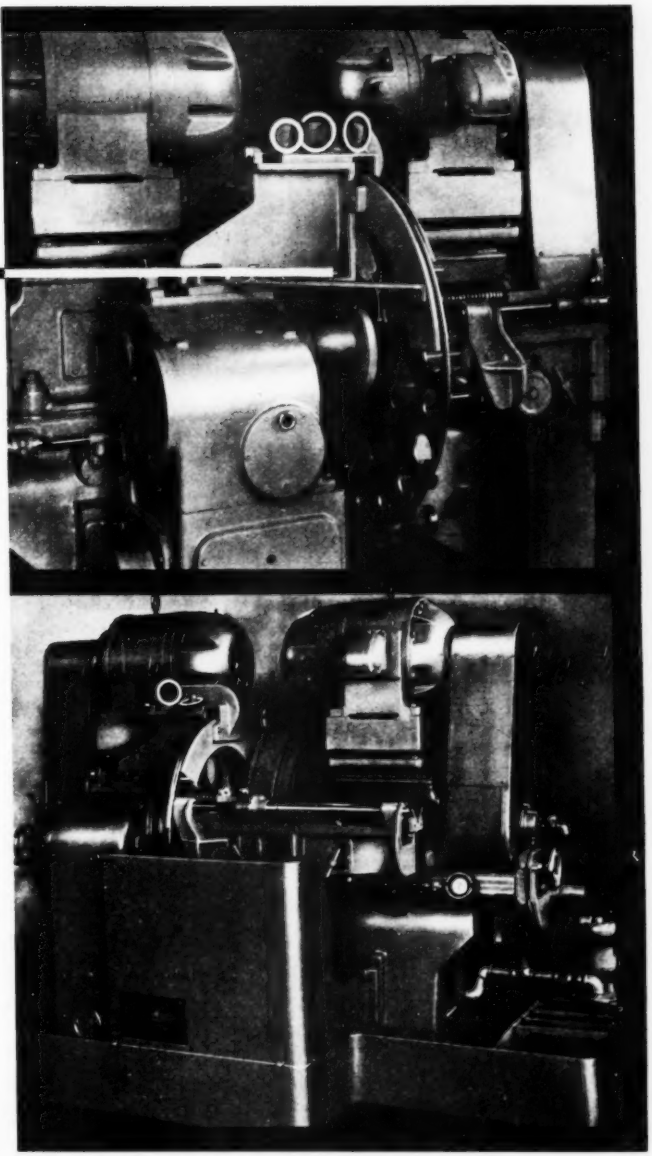
VICTOR GASKETS AND OIL SEALS — SEALING PRODUCT THROUGH RESEARCH

The Greatest Name in the Gasket Industry

Cut Your Parallel-Surfacing COSTS

RIGHT IN HALF - *like this*

with GARDNER *Double* GRINDING



YOU get more productivity per man-and-machine-hour — more than DOUBLE, in many cases — by grinding TWO surfaces with ONE pass. The parts flow smoothly between two opposed grinding wheels — as fast as they can be fed into and ejected from the machine. Here is a typical example:

WORK DATA

Part *Gears 3.165" OD x 1.261" ID x .495" Thick*
Material *Steel*
Operation *Grind Two Sides*
Tolerances *.001" for Parallel; .004" to .005" for Uniformity*
Stock Removal *.015" Maximum Overall*
Production *18 to 20 Pieces per Minute*
Feed *Hand Load to Trough; Automatic Unload*
Machine *#125-26" Gardner Grinder With Rotary Work Carrier*

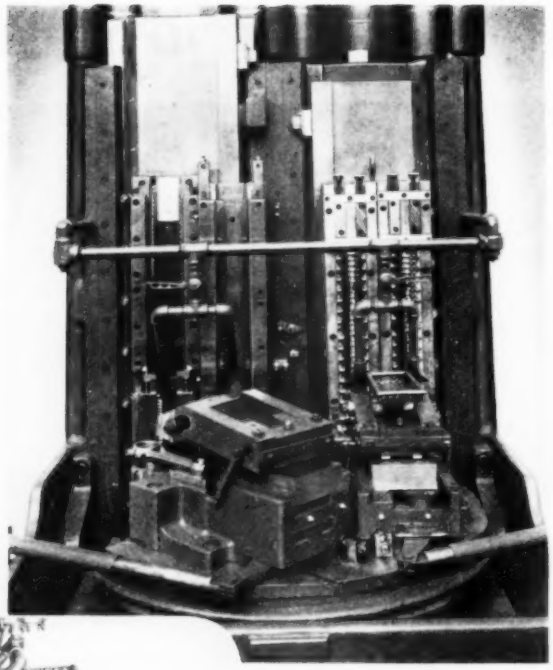
Cut your high labor and material costs by halving your parallel-surfacing operations — on a GARDNER *Double* GRINDER!

Write for Bulletin on Gardner Double Grinding

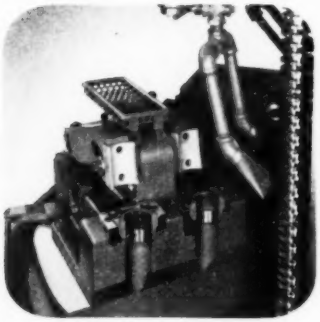
GARDNER - GRIND YOUR *Flat* SURFACES

GARDNER MACHINE COMPANY

444 East Gardner Street . . . . Beloit, Wisconsin, U.S.A.

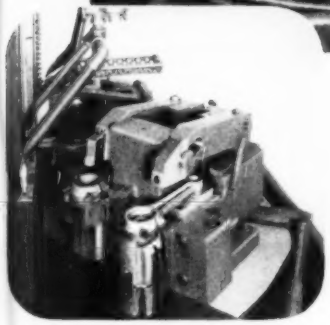


Close-up of tooling and broach inserts, designed by Cincinnati broach specialists, and applied to a CINCINNATI No. 10-66 Vertical Duplex Hydro-Broach. Specifications for these machines may be obtained by writing for catalog M-1387-2.



Close-up of the right-hand fixture, where the half bore and joint face of rods and caps are broached.

CINCINNATI



Close-up of the left-hand fixture, where the bolt bosses are broached and the cap is sawed from the rod.

Family of Six Con Rods Broached and Cut Apart . . . on this CINCINNATI No. 10-66 VERTICAL DUPLEX

By keeping a family of parts together, you can usually reduce their manufacturing cost. Especially is this true when the machining operations are applicable to the broaching process. Cincinnati broach engineers, specialists with families of parts, tooled up six sizes of connecting rods on a CINCINNATI No. 10-66 Duplex Vertical Hydro-Broach, to broach various surfaces and to cut apart the cap and rod. The pictures tell the complete story of this low cost broaching application, and the following information gives you details of production and related data.

Part name	Connecting rod	*Stock removal*	Up to 3/16"
Material	Steel forging		
Operation	Broach bolt boss sides, bolt and nut seats, saw cap from rod, broach half bore and finish broach joint face	*Production*	113 rods and 113 caps per hour

Send us your "family troubles." Our broach engineers will show you how to solve them at a low cost.

Family of connecting rods and caps broached and "broach sawed" apart on the equipment illustrated here. The rod at the top shows the sequence of operations, indicated by the color lines, and reading from left to right.

THE CINCINNATI MILLING MACHINE CO.

CINCINNATI 9, OHIO, U. S. A.

MILLING MACHINES • BROACHING MACHINES • CUTTER SHARPENING MACHINES
FLAME HARDENING MACHINES • OPTICAL PROJECTION PROFILE GRINDERS • CUTTING FLUID

Solve THESE DESIGN PROBLEMS

ON POWER TRANSMISSION DRIVES *with* TAPER ROOT INVOLUTE SPLINES

PARALLEL KEY HOBS REQUIRE SUBSTANTIAL LUGS. THESE LUGS ARE SUBJECT TO QUICK WEAR AND REDUCED HOB LIFE.
INVOLUTE HOBS REQUIRE LUGS ABOUT 1/3 THOSE USED FOR PARALLEL KEY DESIGNS, ADDING ROOT CONTACT AREA.
MATING HUB LOCATES ON THE TAPER INVOLUTE FORM IS SELF-CENTERING. EQUALIZED LOAD STRESSES AND BEARING.
INVOLUTE HOB CUTS ANY STANDARD P.D. OF SAME PITCH, AND ANY CONVENTIONAL INCLUDED ANGLE.

Write: By using Taper Root Involute Splines, power transmission drives can be produced more practically, at a cost that permits a profit. Write today for information on how to produce them easily, rapidly and economically with Barber-Colman Hobs and Machines. Address requests for estimates to Department 3612.

1 SHORT LENGTH, SOLID FIT
Taper Root Involute Splines seldom require a length more than equal to the pitch diameter, which is sufficient for carrying any potential load.

2 RESIST TORSIONAL STRESS
Taper Root Involute Splines offer about 50% more root contact area than parallel key mounts. Tests prove the strength of this Design equals that of a solid shaft, slightly larger in diameter than the root diameter of the spline

3 EASY MACHINING, LOW TOOLING COST
Taper Root Involute Spline Hobs have more teeth, remove less metal per tooth space, and run at faster RPM's than parallel key hobs. Tool life is longer because clearance lugs are reduced.

4 LOCATING SHOULDERS ELIMINATED
Taper Root Involute Splines locate against the taper and are thereby self-centering. Equalized bearing and stresses result on all teeth.

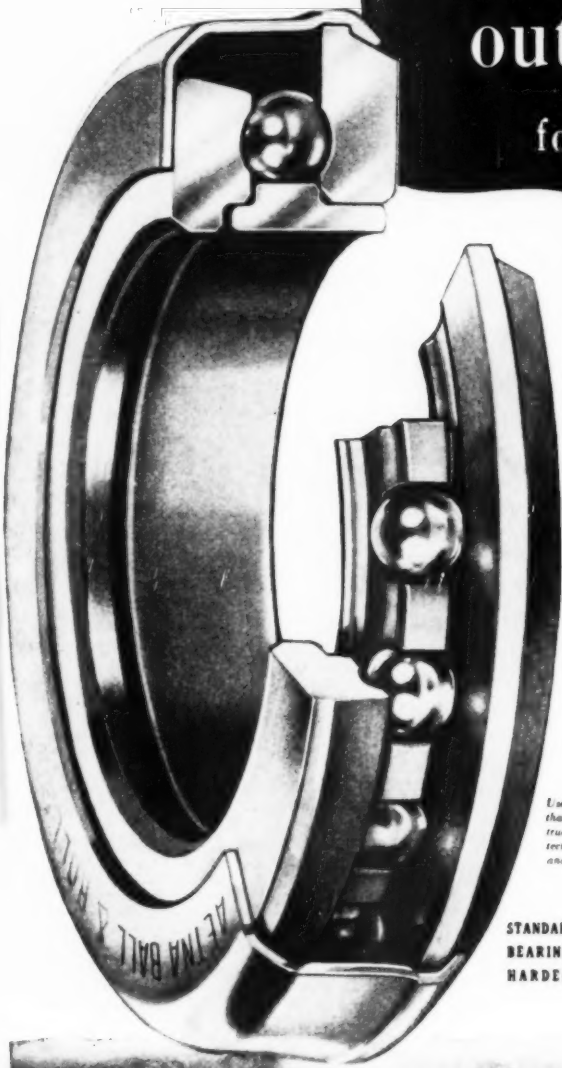
BARBER COLMAN

Barber-Colman Company

GENERAL OFFICES AND PLANT, 3612 LOOMIS STREET, ROCKFORD, ILLINOIS, U.S.A.

Out of sight, out of mind

for vehicle life



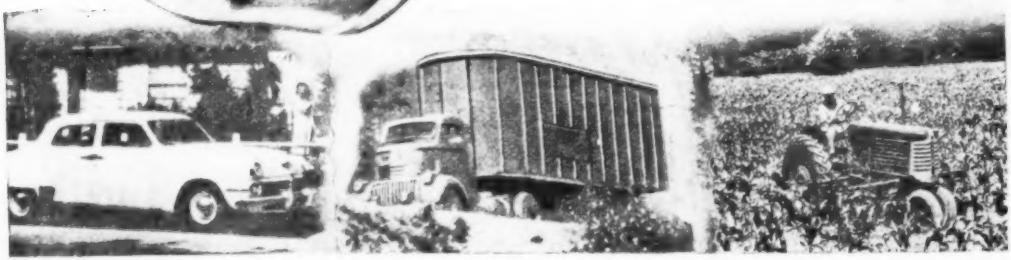
Silent, smooth, carefree performance for vehicle life—these are the qualities you want in every working part of the cars, trucks or tractors you make. Particularly in the parts of hard-to-get-at assemblies where failures mean major repair bills and sales-reflecting complaints.

For those hard working clutch assemblies, for instance, it's good business to specify Aetna T type clutch release bearings. Aetnas, as you can see in the cross section opposite, are designed with one-piece, T shaped oil impregnated bronze ball retainers which end all the troubles common to conventional type bearings. Note, for example, how the T locks balls and raceways in permanently true alignment. That means complete absence of eccentric thrust and its resultant noise and punishing wear. Aetna design provides an exceptionally large grease reservoir that's factory-packed with the best lubricant obtainable. Thus Aetnas are not only pre-lubricated but POSITIVELY lubricated for life. Nor can the lubricant escape and cause slippery clutch facings. No oil fittings, no extra installation or maintenance costs are necessary. Investigate. Learn the many other reasons Aetnas deserve a place in your specifications. AETNA BALL AND ROLLER BEARING COMPANY, 4600 Schubert Avenue, Chicago 39, Illinois. In Detroit: SAM T. KELLER, 2457 Woodward Avenue.

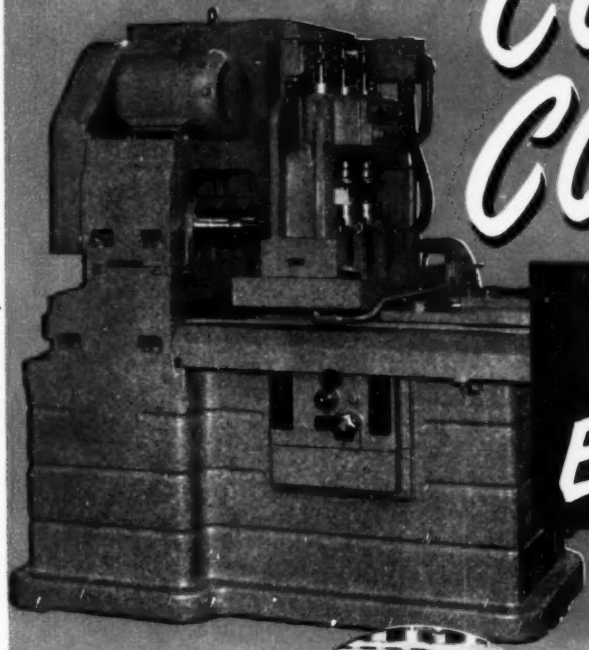
Used as standard equipment by more than 50% of the country's leading car, truck and tractor manufacturers. Protected by U. S. Patents Nos. 1958725 and 2140818.

Aetna

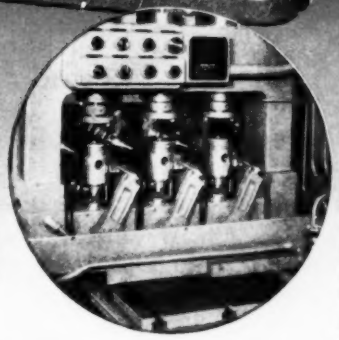
STANDARD AND SPECIAL BALL THRUST BEARINGS · SPECIAL ROLLER BEARINGS · ANGULAR CONTACT BEARINGS · BALL RETAINERS HARDENED AND GROUND WASHERS · SLEEVES · BUSHINGS



WANT TO CUT COSTS?



SEE EX-CELL-O!



To right: Fixture on Ex-Cell-O 113-C Precision Boring Machine provides hydraulic locating and clamping. Operation is tied in with machine cycle. The addition of two interchangeable sets of lower work centers and locating pins adapts the fixture for the whole group of pistons.

For Example:

Ex-Cell-O Standard Machine with High Production Fixture—Bores Piston Wrist Pin Holes with .0003" Tolerance at Net Rate of 211 Pieces per Hour!

The Precision Boring Machine shown to left above (Ex-Cell-O Style 112-C) bores piston wrist pin holes at a rate of 211 pieces per hour, holding a tolerance of .0003" on the bore diameter, and providing a fine surface finish. The high production fixture accommodates a wide variety of similar pistons. Ex-Cell-O machines like this are also widely used for precision turning, facing and grooving operations. If your production involves parts like this, call your local Ex-Cell-O representative, or write Ex-Cell-O in Detroit today!

EX-CELL-O CORPORATION

XLO — EX-CELL-O for PRECISION

48-B

DETROIT 32, MICHIGAN

Special Multiple Way-Type Precision Boring Machines • Special Multiple Precision Drilling Machines • Precision Boring, Turning, and Facing Machines and Fixtures • Precision Cylinder Boring Machines • Precision Thread Grinding Machines • Precision Lapping Machines • Precision Broach Sharpening Machines • Other Special Purpose Machines • Tool Grinders • Continental Cutting Tools • Broaches and Broach Fixtures • Counterbore Sets • Grinding Spindles Hydraulic Power Units • Drill Jig Bushings • R.R. Pins and Bushings • Fuel Injection Equipment • Dairy Equipment • Aircraft and Miscellaneous Production Parts

Serving

World's Industries in Countless Ways

WESTERN *Felt*

JUST A FEW USES:

- **Retaining lubricants**
- **Isolating vibration**
- **Controlling temperature**
- **Reducing weight**
- **Excluding dust, grit, etc.**
- **Cushioning shock**
- **Filtering liquids**
- **Grinding and polishing gaskets, grommets, etc.**
- **Padding, packing, sealing**

Felt's versatility suggests unlimited applications for design needs. Western Felt is available in any form—rolls, sheets, custom cut parts. Felt can be treated chemically to meet practically any requirement.

Western Felt, processed from wool-soft to rock-hard does not fray, ravel or lose its shape. It is cut to remarkably close tolerances and its uniformity is unsurpassed. Felt can be supplied to meet Army, Navy and S.A.E. specifications.

Why not check Western Felt's superior qualities and possible uses. Our engineers will gladly cooperate.

102

Acadia Synthetic Products Division, Processors of Synthetic rubber and Plastics, sheets, extrusions and molded parts.

WESTERN FELT WORKS

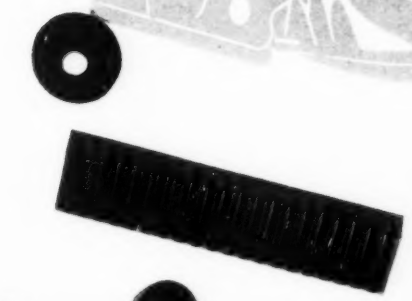
4035-4117 OGDEN AVENUE, CHICAGO 23, ILLINOIS

Branches in All Principal Cities

LARGEST INDEPENDENT MANUFACTURERS AND CUTTERS OF WOOL, HAIR AND JUTE BELTS

Superior

FOR UNLIMITED VARIETIES OF USES



ACADIA

Synthetic Rubber

SHEETS • EXTRUSIONS • CUT PARTS • MOLDED PARTS • LATHE CUT WASHERS

As a material for an unlimited variety of uses, Acadia Synthetics are vastly superior in many essential qualities. They are readily compounded to varying degrees of elasticity, plasticity, resilience, etc., to meet specific operating conditions that call for high resistance to light, air, oil, age, wear and other factors.

Important, too, they are readily processed mechanically to close tolerances in practically any size, shape or form—die-cut, molded or extruded. You name the characteristics, or combination of qualities required. Acadia engineers will gladly help you select the right synthetic for maximum economy, service and satisfaction. *Write today!*

ACADIA *Synthetic* **PRODUCTS**

Processors of Synthetic Rubber and Plastics • Sheets • Extrusions Molded Parts

DIVISION WESTERN FELT WORKS

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Largest Independent Manufacturers and Cutters of Felt

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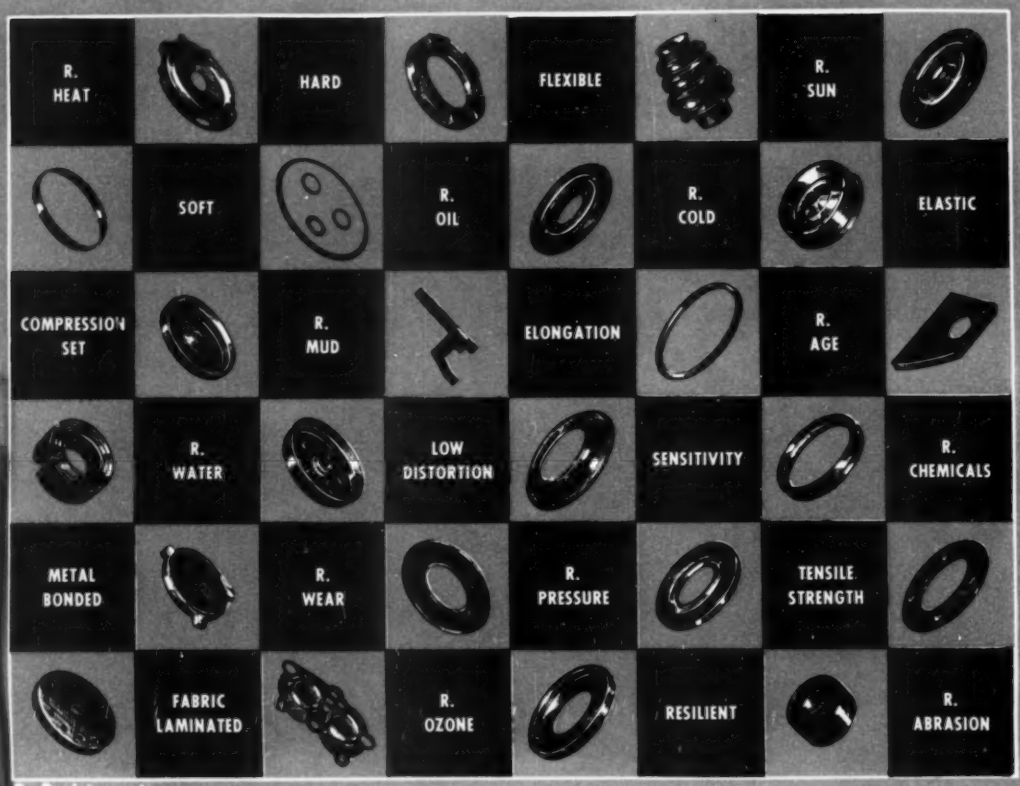

CHART FOR THE IMPOSSIBLE

To figure out all the conceivable ways that physical characteristics, design variations and resistance properties can be combined in Sirvene parts would be nearly impossible. And a great waste of your time, because only *one* combination will do the job for you. Sometimes even that combination seems impossible—and that's when you need the help of Sirvene engineers. Taking your specific performance requirements, they'll assist you in perfecting the design, then work out the proper combination of oil-resistant elastomers, do the developmental work and produce the parts in quantity under strict laboratory control. You can depend on uniform quality and micrometric accuracy in every part. When you are in a tough spot for the right flexible part to do a critical mechanical protection or sealing job—and to keep on doing it under rough service conditions—call on Sirvene.

OTHER C/R PRODUCTS
Perfect Oil Seals
Sirvis Mechanical Leather

Sirvene products include diaphragms, boots, gaskets, oil seals, washers, packings, and other special molded mechanical pliables.

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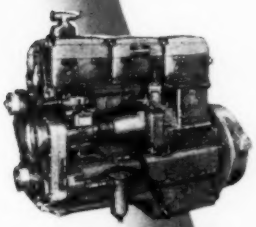
SIRVENE

THE *SCIENTIFIC* COMPOUNDED ELASTOMER



HRB-600—165 hp at [illegible] rpm

Autocar
Corbitt
Dart
Diamond T
Euclid
Federal
FWD
Hendrickson
International
Kenworth
Mack
Oshkosh
Peterbilt
Reo
Sterling
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White

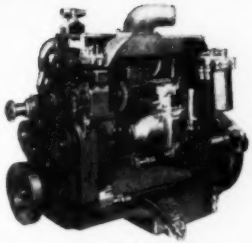
CUMMINS DIESEL

SINCE 1918. PIONEER OF PROFITABLE POWER THROUGH HIGH SPEED DIESELS

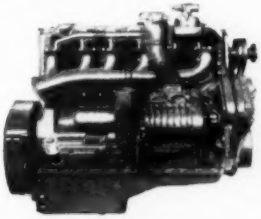
Take Your Choice

Cummins Diesel Engines are standard or optional power in all these leading makes of heavy-duty trucks. Check these truck manufacturers' specifications for Cummins-Powered models.

Write the Cummins Engine Company, Inc., for full details about the fuel economy, performance, low maintenance and long engine life of the Cummins models you choose.



NHB-600—200 hp at 2100 rpm



NHBS-600—275 hp at 2100 rpm

CONDENSED SPECIFICATIONS

MODELS	AA-600	HB-400	HB-600	HRB-600	HBS-600	NHB-600	HRBS-600	NHBS-600
Cylinder	6	4	6	6	6	6	6	6
Bore (In.)	4	4⅞	4⅞	5⅛	4⅞	5⅛	5⅛	5⅛
Stroke (In.)	5	6	6	6	6	6	6	6
Disp. (Cu. In.)	377	448	672	743	672	743	743	743
HP (Max.)	100	100	150	165	200	200	225	275
RPM (Max.)	2200	1800	1800	1800	1800	2100	1800	2100

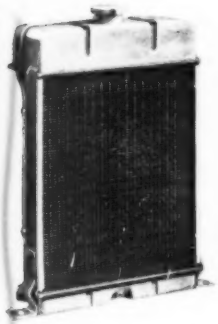
CUMMINS ENGINE COMPANY, INC. • COLUMBUS, INDIANA

YOUNG

FOR EFFICIENT HEAT TRANSFER

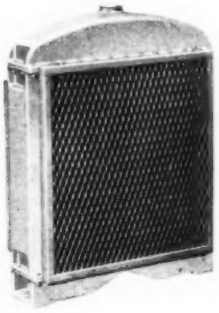
IN ANY AUTOMOTIVE APPLICATION

● From small car heater cores that can be held in the hand to the huge VAD Vertical Air Discharge coolers and condensers that dwarf a man, Young Engineers have developed a complete line of products capable of handling any heat transfer requirement. Young's experience of more than two decades insures products of top efficiency and long service at a mini-



SHEET METAL RADIATORS

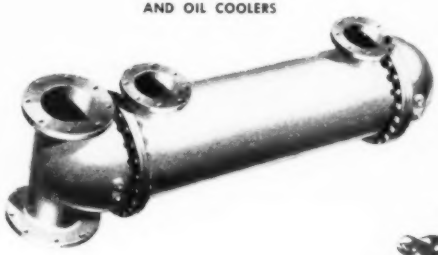
CAR, TRUCK, BUS, AND LOCOMOTIVE CAB HEATER CORES



CAST TANK RADIATORS

FABRICATED STEEL RADIATORS

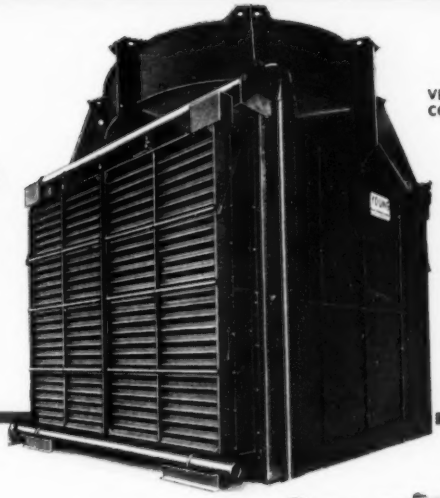
HEAT EXCHANGERS AND OIL COOLERS



YOUNG RADIATOR COMPANY

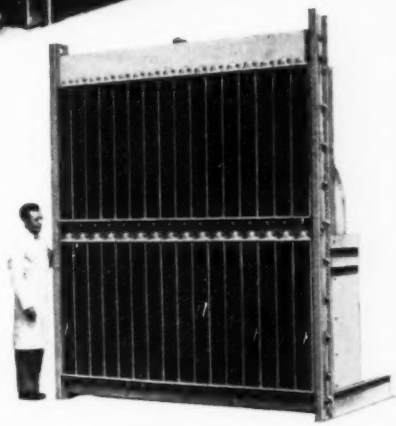
Young Quality

T. M. Reg. U. S. Pat. Off.



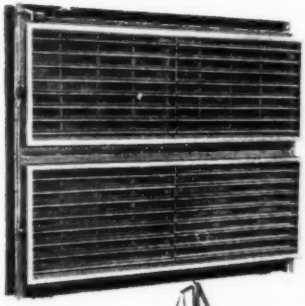
VERTICAL DISCHARGE
COOLERS AND CONDENSERS

mum of cost. Young Engineers take great pride in their ability to design specialized equipment for performing a combination of services. Such versatility makes available a single source for your heat transfer needs . . . assures products that are engineered to work perfectly together. Catalog 148, available upon request, illustrates the broad range of the Young line.

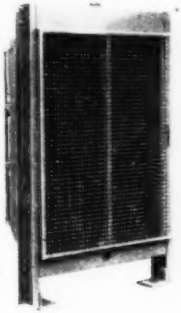


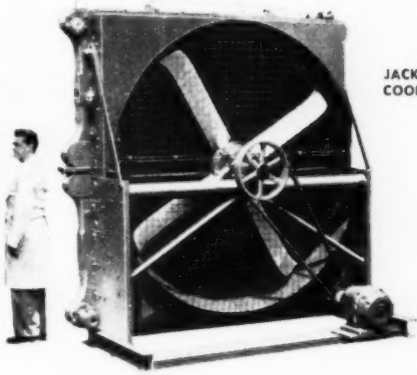
SECTIONAL STEEL
RADIATORS

LOCOMOTIVE
RADIATORS



WELDED STEEL
RADIATORS





JACKET WATER
COOLERS

GENERAL OFFICES • DEPARTMENT 109-C3 • RACINE, WISCONSIN
PLANTS AT RACINE, WISCONSIN AND MATTOON, ILLINOIS

Taps Cylinder Blocks

★ Completes pan rail and ends of 130 blocks hourly at 100%.

★ Station 1, load; Stations 2 and 3, tap 30 holes in pan rail, 14 holes in front face, and 6 holes in rear face; Station 4, unload.

★ Operator merely positions block in loading station and presses cycle button—machine does the rest.

★ Automatic power transfer from station to station.

Ask our field engineer to explain the new Cross Transfer-matics which can be easily changed over from one type of work to another.

Established 1898

THE CROSS CO.

DETROIT 7, MICHIGAN

SPECIAL MACHINE TOOLS

MILLING • DRILLING • TAPPING • BORING • TURNING • SHAPING • GRINDING • HONING

Introducing

THE NEW

Bur-Tex

PLASTIC COATED
PLASTIC PRINTED

TRUNK LINING MATERIAL

There are many reasons why you should be interested in this new, improved trunk lining material.

It is simple to install in a single time-saving operation, stepping up the pace of your assembly line. Plastic properties impart a finished surface and neat appearance that will last as long as the automobile you build.

Sound-absorbing, sound-deadening modified jute felt lining is plastic coated, plastic printed in attractive designs and then embossed. Permanent inks make surface easy to wash and keep clean. Resists gasoline, motor oil, alcohol and other common solvents.

Available in any combination of colors and patterns to suit your styling requirements . . . adding a final touch of beauty and design to reflect the high quality of your automobile.

Above are typical attractively embossed patterns now in production.

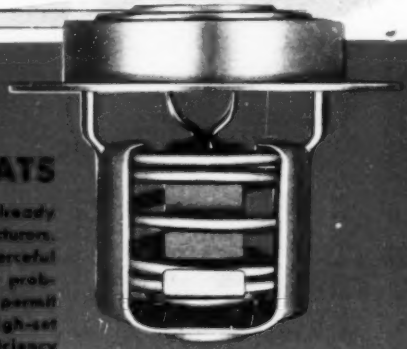
Bur-Tex TRUNK LINING MATERIALS

BURLINGTON MILLS INCORPORATED

Burlington, Wisconsin

DOLE *invites any test you may want to make of*

Thermostat Performance

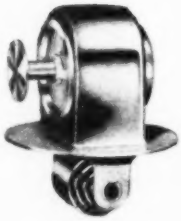


DV THERMOSTATS

Great improvement in thermostat design! Already accepted by leading car and truck manufacturers. Coil spring action controlled by special new forceful thermostatic element. Specifically meets the problems of modern cooling system design to permit smaller radiators, higher pump pressures, high-set pressure caps – all with increased pump efficiency and freedom from cavitation.

Also a complete line of standard types in all sizes as shown by representative numbers below.

No. B-65—Typical Dole Bi-Metal Thermostat operated by large coil; for motor-block installations



No. P-16 — The poppet type Dole Thermostat with bi-metal element for motor block

No. B-F — The bi-metal element in hose-line models with butterfly valve

No. P—The poppet principle in a line of Dole Thermostats for hose-line applications

THE DOLE VALVE COMPANY

1901-1941 Carroll Avenue, Chicago 12, Illinois

Detroit • Los Angeles • Philadelphia

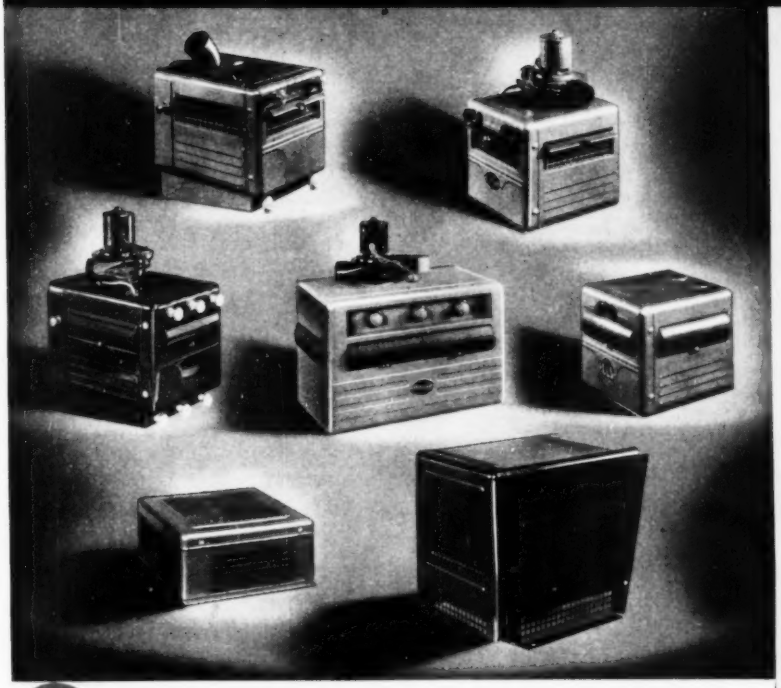
CONTROL WITH DOLE

BEFORE YOU STANDARDIZE . . .

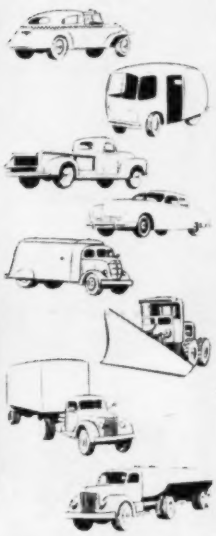
INVESTIGATE THE COMPLETE NEW LINE OF

SCHOFIELD HEATERS

E. L. SCHOFIELD-INCORPORATED ELS INC ROCKFORD ILLINOIS



ENGINEERED PERFORMANCE *PROVEN* IN THE MOST RUGGED SERVICE



ATTENTION: HEATING AND VENTILATING ENGINEERS

Your analysis of heating, defrosting and ventilating equipment is not complete until you get full details on the Schofield line of heaters. These more efficient units are designed for all types of commercial service . . . are *completely engineered* to meet all your heater requirements.

Complete information on this ruggedly-constructed line of heaters will be sent to you on request . . . if you prefer, we will have our representative call.

If desired, our engineers are available to assist you in the analysis of your heating, defrosting and ventilating problems.

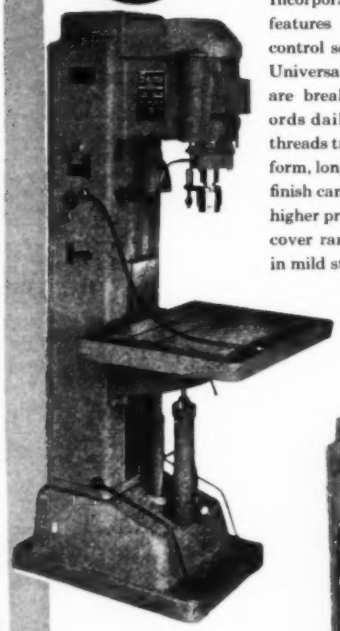
SPECIFY **SCHOFIELD-ENGINEERED FRESH AIR HEATERS** FOR **TOP DEFROSTING EFFICIENCY** UNDER **ALL** DRIVING CONDITIONS

E. L. SCHOFIELD, INC. • ROCKFORD, ILLINOIS

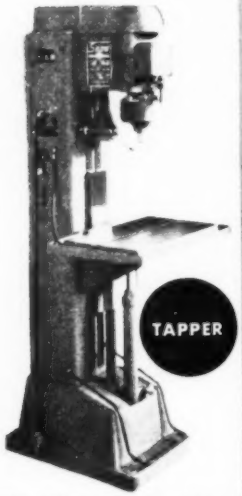
ORIGINAL EQUIPMENT MANUFACTURERS

Unprecedented PRODUCTION PEAKS

THREADER



SNOW THREADING MACHINE — Incorporating all the advanced features of air and electrical control sensitivity, Snow Full Universal Threading machines are breaking production records daily. Highly accurate threads true to lead and thread form, long chaser life and clean finish can be obtained at much higher production rates. 2 sizes cover range from #3 to 1 inch in mild steel.



TAPPER

SNOW FULL UNIVERSAL TAPPING MACHINE—4 sizes cover range from #0 to ¾ inch in mild steel.

DRILLER

SNOW FULL UNIVERSAL DRILLING MACHINE—2 sizes range from #60 to ⅜ inch in mild steel.

SNOW
FULL UNIVERSAL

DRILLING, TAPPING & THREADING MACHINES

Air-operated, Electrically Controlled

In tomorrow's rugged profit competition only the best designed, highest producing machine tools can win. Snow machines, minimizing operator skill and effort are cutting costs of small parts in thousands of plants. They provide every conceivable method of control and permit quick set-up with any type of hand feed or automatic holding fixture. Extremely sensitive in feed, and accurate in depth of stroke. Production records previously unheard of are being reported.

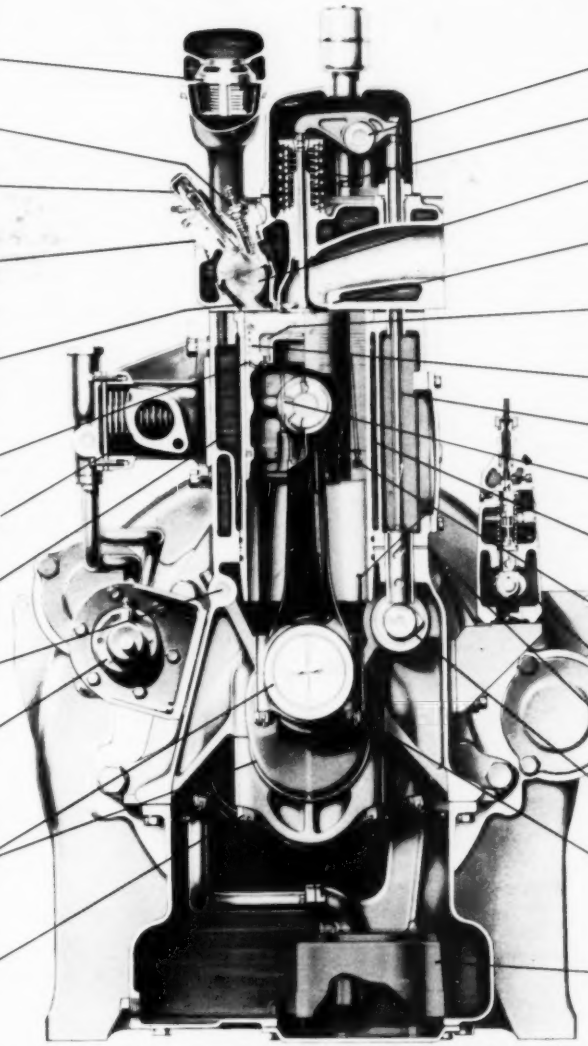
Snow

HIGH PRODUCTION DRILLING TAPPING THREADING, NUT TAPPING, 2 SPINDLE, HORIZONTAL MACHINES, DRILL PRESS TAP HEADS, JIGS AND FIXTURES

SNOW MANUFACTURING COMPANY
437 EASTERN AVE., BELLWOOD, ILLINOIS
(Chicago Suburb)

Submit sample parts and blue prints for quotation, production estimates and tooling data.

WAUKESHA *Diesel* ENGINES



Thermostats assist quick warm-up and maintain jacket heat.

Glow plug for electric starting.

American Bosch single hole, pintle nozzle.

Waukesha clean-burning water-cooled combustion chamber removes from the outside.

High heat concentrates at insulated chamber outlet; accelerates ignition, promotes clean burning and high economy.

One straight side oil control piston ring.

Built-in oil cooler increases oil and engine life.

Full length water jackets increase cylinder life.

Large, rifle-drilled, main oil header.

High capacity outside-mounted oil pump.

Hardened main and connecting rod crankshaft journals. Steel backed, copper-lead-babbitt precision bearings pressure oiled.

Alloy-steel heat-treated main bearing studs.

Pressure oiled rocker arms.

Twin valve springs and hardened guides.

Controlled turbulence chamber insures clean, complete, combustion.

Hardened alloy exhaust and intake valve seats.

Cooling oil at piston crown circulates under intermittent pressure.

Four non-stick, wedge-type piston rings.

Tubular push rods.

Cooling oil passage to piston crown.

Hardened, removable cylinder sleeves test 400-450 Brinell.

Cooling oil discharge from piston crown.

American Bosch injection pump.

Tell-tale drip passage

Hardened camshaft, single forging.

Four alloy-steel heat-treated rod bolts.

Oil level equalizer and intake strainer.

Salient features of Waukesha Model 6-WAKD Waukesha Diesel Engine

WAUKESHA MOTOR COMPANY • WAUKESHA, WIS.

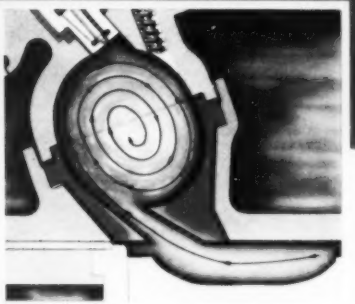
Eastern Sales Office: Eight W. 40th St., New York 18, N. Y.
Mid-Continent Office: 703 S. Wheeling St., Tulsa 4, Okla.
Pacific Coast Office: 4297 Pacific Blvd., Los Angeles 11, Calif.

SEE OTHER SIDE FOR COMBUSTION SEQUENCE

1433-B
3-15-49.16-M

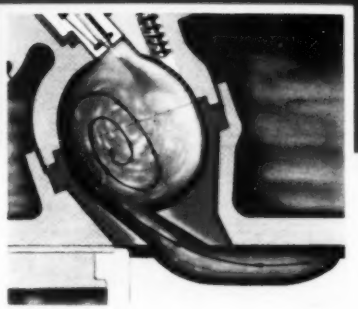
WAUKESHA DIESEL COMBUSTION SEQUENCE

1 — Compression nears peak. Air, heated by pressure and glowing combustion chamber throat, nestles in controlled turbulence.

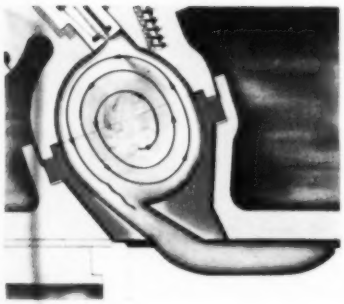


1.

2 — Fuel enters and is swept from nozzle into air stream; burning starts.

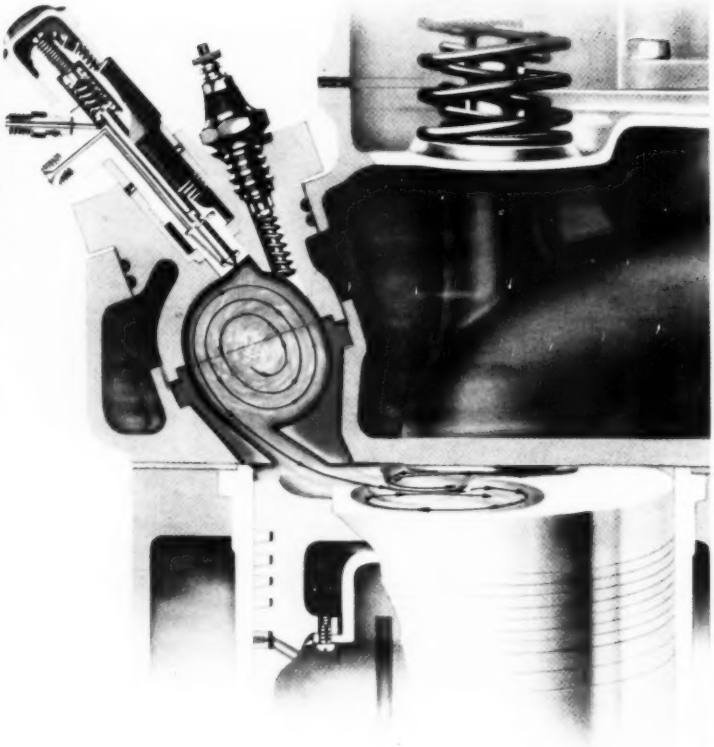


2.



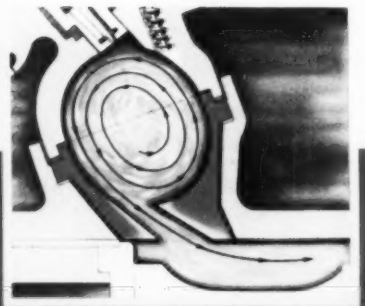
3.

3 — Charge in chamber burning fully; turbulence insures efficient mixing of fuel with air.



4 — Injection ends; turbulent burning gases spread into swirl chambers in piston crown. Full power developed.

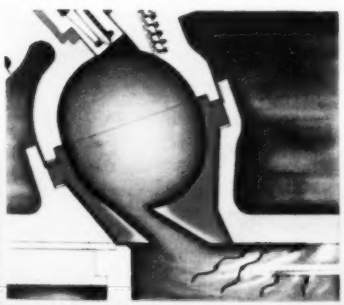
4.



5.

5 — Expanding gases deliver power smoothly as piston descends.

6 — Power stroke nearly complete; exhaust valve opens at optimum point. Heated combustion cup will warm incoming air on next cycle.



GUNITE

SERVES THE AUTOMOTIVE INDUSTRY

BRAKE DRUMS Heavy duty drums for low-cost long-life highway service on trucks, tractors, trailers, buses, and other vehicles. Made in a wide variety of types and sizes for replacement or original equipment.

TRUCK WHEELS Truck fronts and truck dual rears have many distinctive design features for greater strength, safety, and durability. Accurate machining assures proper fit on all standrd axles. Rear assemblies include Gunite Brake Drums. In 20", 22", and 24" sizes.

TRAILER WHEELS Features include deep-spoke continuous-web design for greater strength, extra-wide lugs on floating bolts, accurate machining to fit Timken, Standard Forge, and Shuler axles. Famous Gunite Brake Drum is part of zach assembly. In 20", 22", and 24" sizes.

CYLINDER LINERS Superior qualities include fine grain material, self-lubrication, smooth-finish machinability, durability, and hardness. Made of quality-controlled processed gray iron (Gunite). Sand castings only, for machining by purchaser. In wet or dry types.

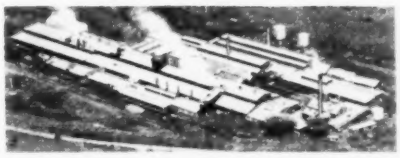
CLUTCH PLATES Quality castings made with exacting care to purchaser's specifications. Gunite specialized experience in quality control of processed castings insures high performance of the finished product.

CRANKSHAFTS Cast crankshafts, made of quality-processed Gunite material with selected specifications, have inherent damping qualities, take a smooth finish, include integral counterbalances, and permit coring of lubricating holes.

CAMSHAFTS Made with the correct rough form of all throws in exact position, requiring a minimum of machining. Smooth machinability, high wear resistance, shock damping, and low total cost are distinctive features.

GUNITE FOUNDRIES CORPORATION

ROCKFORD
ILLINOIS



PROCESSED GRAY IRON, MALLEABLE, ELECTRIC STEEL CASTINGS

ESTABLISHED
1854

★ MODERN PRODUCTS

For Modern Living . . .

We of United Specialties Company are proud of our part during the past quarter of a century in the development and refinement of the internal combustion engine, the many applications of which have so mightily contributed to our modern American way of living.

United Oil Bath Air Cleaner protection over that period of time has consistently improved the performance and increased the life of engines on cars, trucks, busses, agricultural and industrial tractors and all types of Diesel and gasoline power units.

In safety of vehicle operation and driver convenience our Mitchell Division pioneers units such as semi-automatic directional signal switches and ignition switches. Other contributions to modern living, coming from our rolled shape department, consist of such products as automotive window frames, locomotive and railroad coach side panels, rolled material for lighting reflectors and pre-fabricated housing sections.

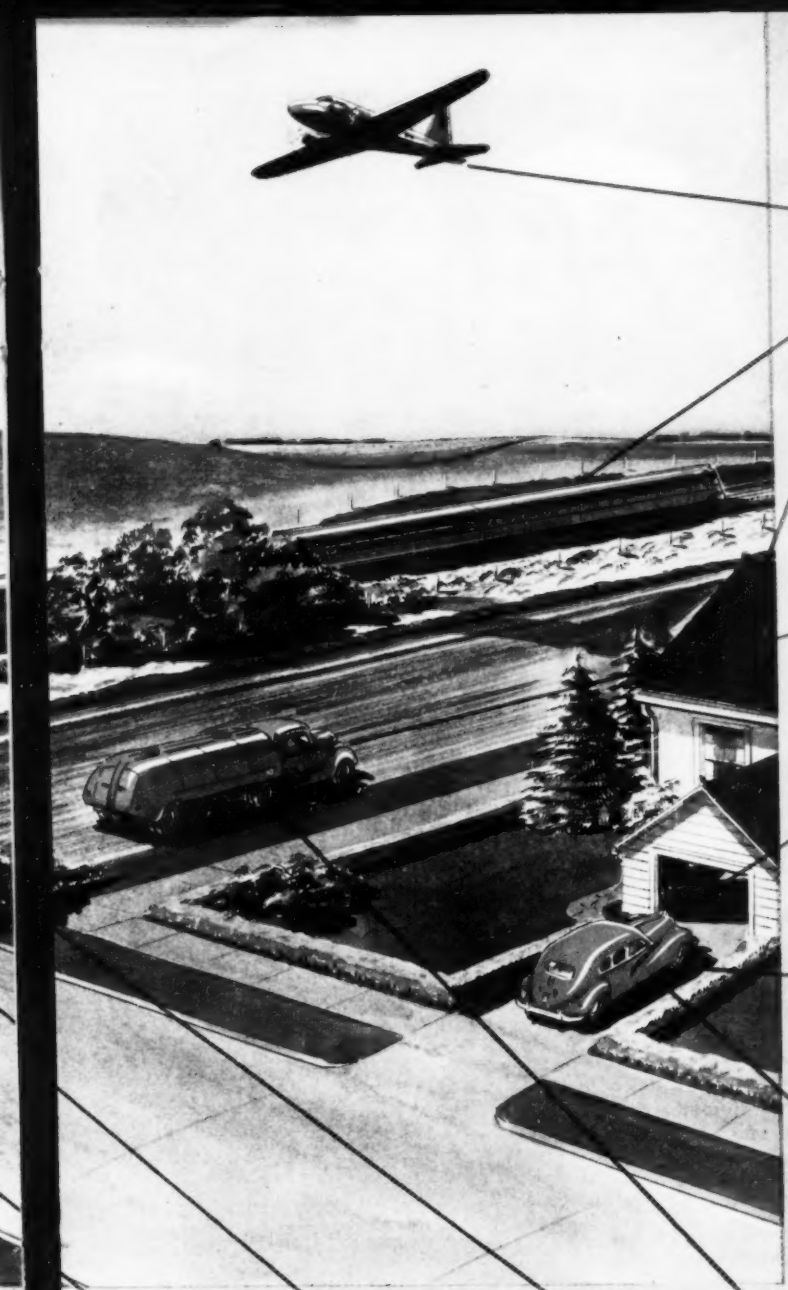
Such close contact with so many facets of industry induces a spirit of perpetual alertness. We are constantly looking ahead towards improvement of product, its design and production. This is both a habit and a "must".

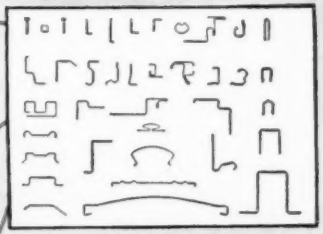
The toy wheelbarrow and scooter shown here are products of our new toy and wheel goods division. Benefitting from our extensive stamping experience, they are unusually sturdy, attractive, well-built and reasonably priced.

This United oil bath air cleaner affords real dust protection for small engines used on garden tractors, power lawn mowers, motor scooters and many other applications of such power units.

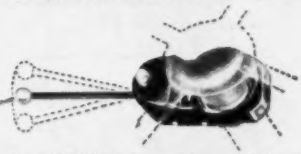
UNITED
SPECIALTIES COMPANY

United Air Cleaner Division • Chicago 28
Mitchell Division • Philadelphia 36

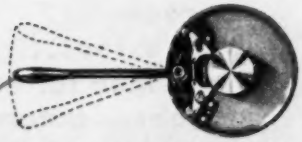




Metal rolled shapes produced in Philadelphia plant — complete range of metals, designs, gauges, stainless steel, aluminum, brass, bronze copper cold rolled, drawn and pressed for automobiles, airplanes, architectural requirements, railroad cars, radios, all industrial uses.

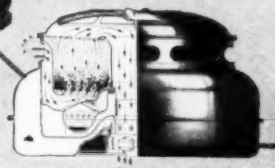


New Mitchell clamp-on semi-automatic directional signal switch designed especially for trucks.



Mitchell built-in type semi-automatic directional signal switch used in passenger cars.

Conventional type Mitchell ignition switch used on popular makes of cars and trucks.

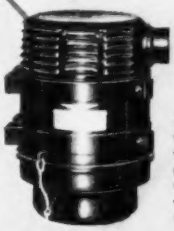


New style combination oil bath cleaner and silencer designed for use on down draft carburetors where head room is not available for conventional type combination cleaner and silencer.

Popular style of oil bath air cleaner used on trucks where cleaner is mounted directly on air horn of down draft carburetor.

Tractors, combines and other agricultural gasoline engines are protected by this standard type United oil bath air cleaner.

This United oil bath air cleaner is designed especially to protect Diesel engines in truck, tractor, grader and industrial power units, where wide range of engine speed occurs.



Heavy duty truck oil bath cleaner. Distinctive features are great dirt-trapping capacity with extremely high cleaning efficiency, large oil reservoir and ease of servicing.

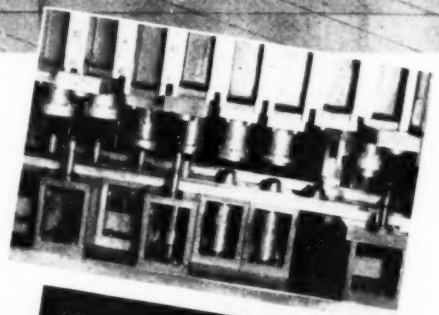
Can you match these production figures?

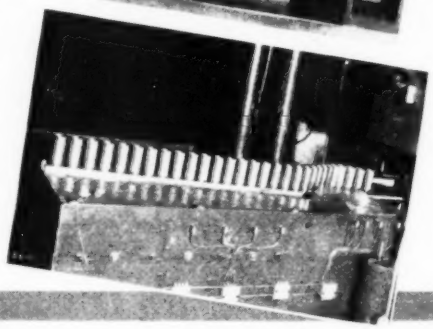
THIS Verson TRANSMAT PRESS

replaces 7 presses . . . frees 12 men for other jobs . . . automatically produces over 1000 coil containers per hour!

Verson TRANSMAT Presses open a whole new concept of metal forming — completely automatic production. The press illustrated and the accompanying close-ups indicate what can be done. .015″ strip is fed from a coil, blanked and deep drawn into ignition coil containers — 2.1″ in diameter and 4-4⅞₄″ deep. Seven operations are performed without intermediate handling, annealing or pickling. Completed units are discharged at the rate of 1000 per hour.

Consider what this can mean to you in the mass production of your product and write today for additional information.





VERSON ALLSTEEL PRESS COMPANY

9307 South Kenwood Avenue
Chicago 19, Illinois

Holmes Street and Ledbetter Drive
Dallas 8, Texas

BLANKING PRESSES • FORGING PRESSES • DRAWING PRESSES • HYDRAULIC PRESSES
PRESS BRAKES • DIES • DIE CUSHIONS

Complete CONTROL IN EVERY STEP OF ENGINE OPERATION

for DIESEL GASOLINE OR GAS

Model 1436

with SYNCHRO-START *Automatic* ENGINE CONTROLS

STARTING

When power is demanded SYNCHRO-START will automatically start the engine from any type of remote pilot switch, such as power failure switch, temperature switch, float switch, pressure switch, line voltage drop, etc.

STOPPING

When power is no longer needed, SYNCHRO-START will automatically stop the engine—shut off battery current, ignition, fuel—water—air—or whatever is necessary for a perfect stop and reset the controls for the next power demand.

PROTECTING

While the engine is running, it is fully protected against any abnormal condition, such as low oil pressure, overheating, failure of fuel or ignition, overspeeding, etc. . . Any such failure will shut the engine down before damage can result. The interrupted and overall cranking limit features protect the starting motor and battery.

SIGNALING

In case of any failure of the engine while running or failure to start, the SYNCHRO-START controls will stop the engine and any desired ALARM or SIGNAL may be used to summon an operator and a signal light in the front of the cabinet will show the exact cause of the trouble.

SYNCHRO-START GIVES *Continuous* AND *Full Automatic* OPERATION

SYNCHRO-START Controls have been providing safe, dependable AUTOMATIC power for America's largest dams, bridges, irrigation projects, commercial and institutional jobs of refrigeration, air conditioning and power generation, mine and oil field pumping, theatres, hospitals, marine installations, radio stations, fire protection, Army, Navy and Air service installations, pipe line booster stations and scores of other main, auxiliary or emergency uses.

Other SYNCHRO-START products include Solenoids, Overspeed Governors, Automatic Cranking Controls, Safety Stop and Alarm Sets, Multiple Engine Load Control Panels, Fire Pump Panels, Oil and Water Switches, Power Failure Relays, Remote Control Stations, Magnetic Contactors, and all types of relays for special applications. Your engine dealer can furnish you with SYNCHRO-START Controls, or, write direct to us for details.

SYNCHRO-START PRODUCTS, INC.

Automatic Engine Control Equipment

1046 W. FULLERTON AVE. • CHICAGO 14, ILLINOIS

TRACTORS

CRANES

BULL-DOZERS

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Operator-Comfort

MEANS BETTER PERFORMANCE OF YOUR EQUIPMENT

MILSCO "COMMANDER"

. . . . a seat designed to give the operator exceptional comfort and ample leg room. Frame is made of heavy steel tubing. Removable cushion is padded with FOAM RUBBER, with a choice of covering materials. Complete with padded backrest.

MILSCO "JUNIOR" BUCKET SEAT

. . . . the popular-size bucket seat, with new improved features. Heavy steel base, padded with FOAM RUBBER, rolled edge. Simple to install with the new Milsco Ventilation-Drain channel. Comes complete with attaching bolt which is inserted through this channel as a simple assembly operation. Can also be had with backrest.

MILSCO *NEW* SENIOR SEAT

. . . . The new Milsco Senior seat is the last word in operating comfort. The Milsco Senior gives additional support where it is needed most to assure safer operating efficiency. Padded with FOAM RUBBER, complete with the Milsco Drain-Ventilation channel for quick installation.

Designed to Meet *Your* Particular Needs

The seats shown above represent part of the standard Milsco stock seats. If your equipment requires seating of a special design, we will be glad to have our Engineering Department work with your engineers in constructing seats adaptable to your equipment. Write today . . . for better riding tomorrow.

MILSCO MANUFACTURING COMPANY

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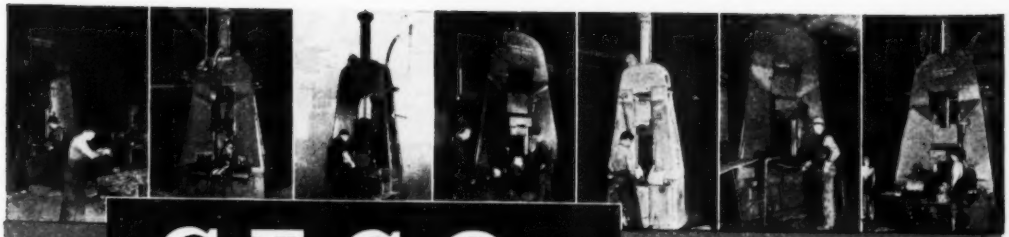
MAKE HARD JOBS EASIER WITH Milsco CUSHION SEATS

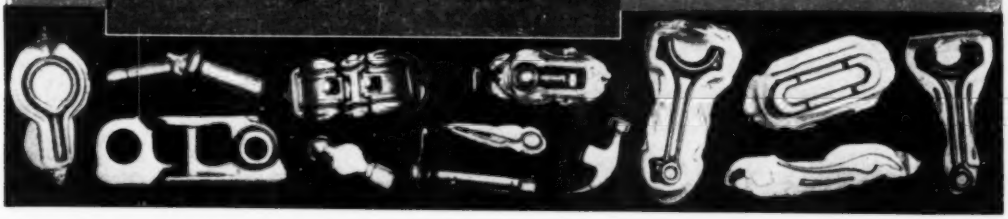


CECO-DROP

THE *New* PISTON LIFT GRAVITY DROP HAMMER

The CECO-DROP forges more minutes per hour, makes more forgings with fewer blows, is safer and easier to operate, costs less to operate.

CHAMBERSBURG ENGINEERING CO.
Chambersburg Penna.



Everything you want for PRODUCTION

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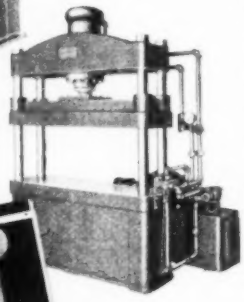
CUT production costs and boost plant output—you can do it with Hannifin "Job Tested" Hydraulic Presses! Hannifin offers standard and special types of presses for a wide variety of uses: straightening . . . press-fit assembling . . . forming . . . molding—in capacities up to 150 tons. Built in open gap and two and four column styles, complete with hydraulic power unit and all necessary gauges and controls. For detailed information and complete selection data, ask for a copy of Bulletin No. 130-W.

HYDRAULIC STRAIGHTENING PRESSES
17 standard models.

Exclusive
SENSITIVE PRESSURE CONTROL
RAM AT TOP POSITION
APPROACH STROKE AT NO PRESSURE
RAM PRESSURE INCREASES WITH LEVER OR PEDAL MOVEMENT

HYDRAULIC FORCING PRESSES
10 standard models.



HYDRAULIC COLUMN TYPE PRESSES
48 standard models.

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CONTROLS to meet your needs

SENSITIVE PRESSURE CONTROL — An exclusive Hannifin development for straightening and forcing presses. A single lever (hand or foot operated) gives operator complete control of ram movement and pressure. Move the lever down slightly and the ram approaches work at "no pressure"... increase lever pressure, and ram pressure increases . . . release lever, and ram returns automatically to starting position.

ELECTRIC PUSH BUTTON CONTROL — For high speed repetitive operations. Engineered to fit work requirements. Wide choice of optional features, including speed control. Automatic or semi-automatic cycling, if desired.

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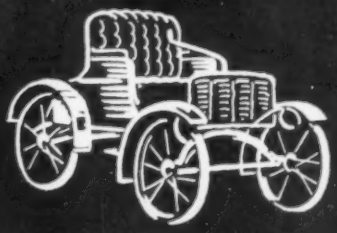

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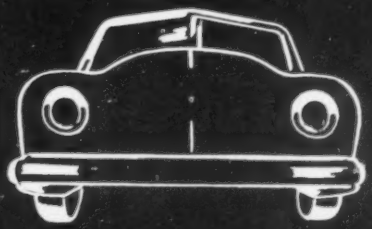
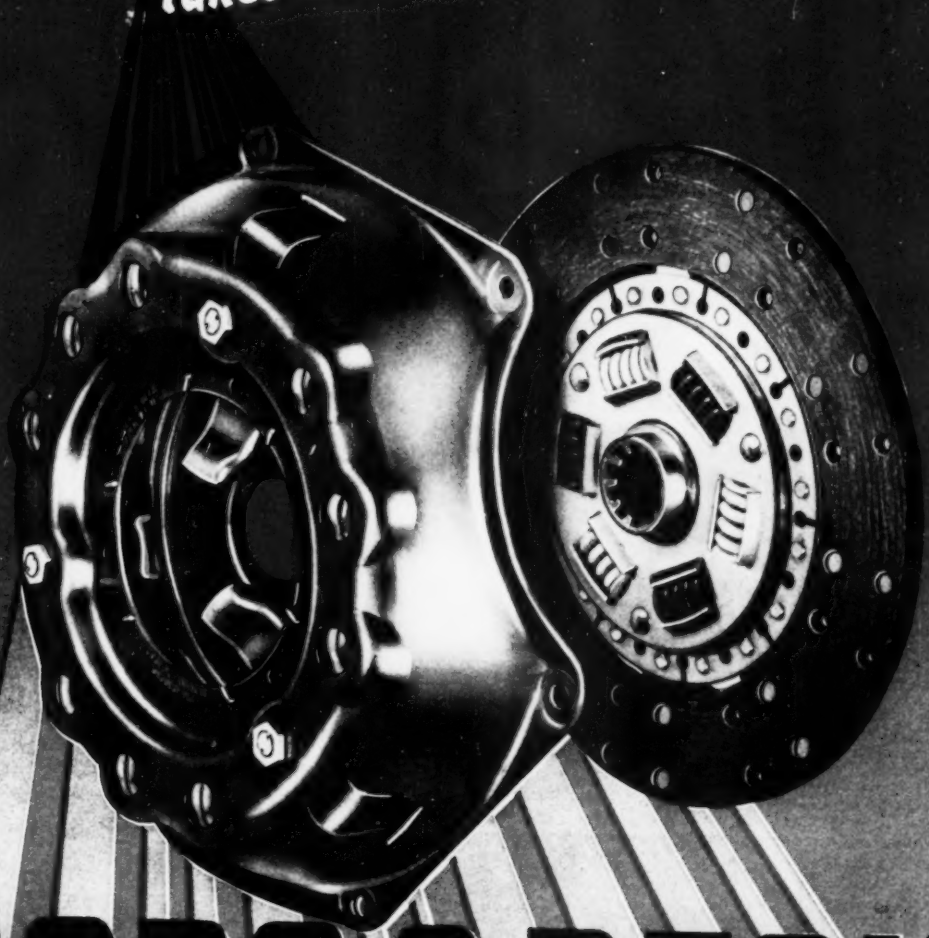
Engineering Pioneer for the Automotive Industry



THESE UNITS FORM BORG-WARNER. *Executive Offices, Chicago:* BORG & BECK • BORG-WARNER INTERNATIONAL • BORG WARNER SERVICE PARTS • CALUMET STEEL • DETROIT GEAR • DETROIT VAPOR STOVE • FRANKLIN STEEL • INGERSOLL STEEL • INGERSOLL UTILITY UNIT • LONG MANUFACTURING • LONG MANUFACTURING CO., LTD. • MARBON • MARVEL-SCHEBLER CARBURETOR • MECHANICS UNIVERSAL JOINT • MORSE CHAIN • MORSE CHAIN CO., LTD. • NORGE • NORGE-HEAT • NORGE MACHINE PRODUCTS • PESCO PRODUCTS • ROCKFORD CLUTCH • SPRING DIVISION • SUPERIOR SHEET STEEL DIVISION • WARNER AUTOMOTIVE PARTS • WARNER GEAR • WARNER GEAR CO., LTD.

Today BORG-WARNER Products are standard equipment in 19 of 20 makes of cars

Engineered by Borg & Beck means...MAXIMUM clutch DEPENDABILITY for that vital spot where power takes hold of the load!



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BORG & BECK CLUTCH · THE STANDARD ·

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BORG & BECK DIVISION

Borg-Warner Corporation

CHICAGO, ILLINOIS

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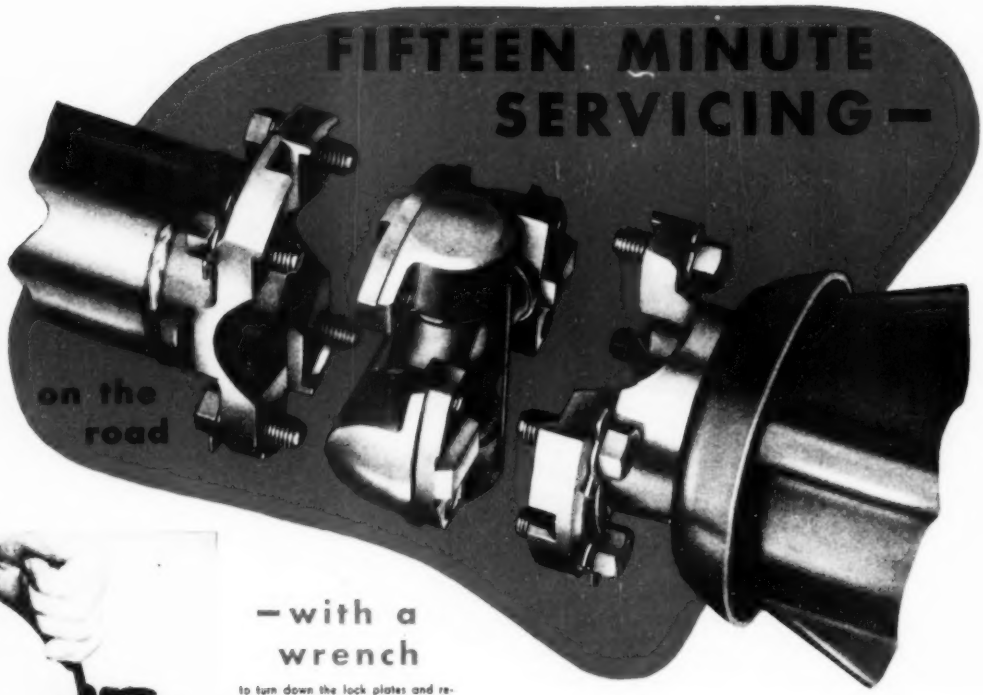
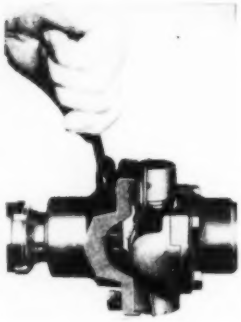
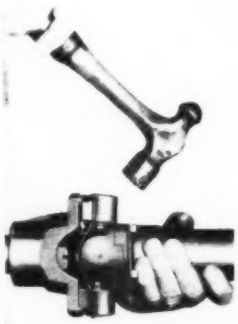
FIFTEEN MINUTE SERVICING—





—with a wrench

to turn down the lock plates and remove the bolts — and to tighten and lock them again.



—and a hammer

to tap the tops of the bearings lightly, to release them — and to compress the cork packing between the bearings and trunnions when the joint is reassembled.

MECHANICS Roller Bearing UNIVERSAL JOINTS can be removed and replaced — on the road — in 15 minutes — with a wrench and hammer — without disturbing the original accurate alignment and balance. The flange-type bearing assembly can be lifted out, simply by removing the screw bolts. Let our engineers show you how this and other exclusive MECHANICS Roller Bearing UNIVERSAL JOINT features will help give your product competitive advantages.

MECHANICS UNIVERSAL JOINT DIVISION
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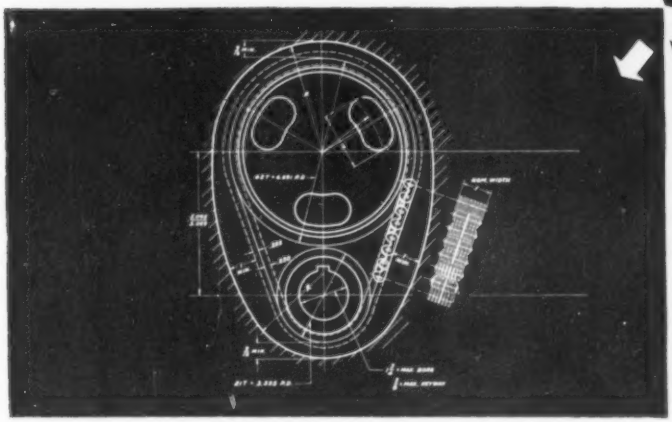
UNIVERSAL JOINTS
For Cars • Trucks • Busses and Industrial Equipment

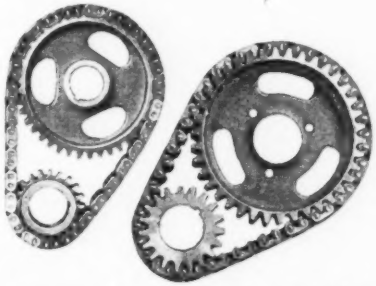
What's most important about a timing chain drive?



1. Morse timing chain drives, such as the one shown in this drawing, have been operating silently and efficiently under more automobile hoods than any other type of timing drive. That speaks worlds for the quality of Morse Silent Chain and Sprockets, but there's another side of the story.

Is it possible that it would pay you well to turn a critical eye to your current chain drives? Are you taking advantage of the latest developments in chain and sprockets? Can already good performance be stepped up? Can substantial savings be made in manufacturing?

2. Here are just a few of the factors to investigate with Morse engineers; sprocket-tooth combination in relation to chain life; guide position and type; lubrication methods; chain width; placement of sprocket reliefs; sprocket materials. All these points – and many more – are carefully weighed by Morse in developing or improving a drive.



3. Every element in a chain drive is of equal importance in attaining maximum performance. Have Morse review your *complete* timing-drive situation. As automotive chain specialists, Morse can evaluate all factors. Volume production in two plants, means your requirements get full attention. Contact Dept. 317. Morse Chain Company. Detroit 8, Michigan.

Roller Chain Drives

Roller Chain Couplings

Silent Chain Drives

MORSE

MECHANICAL POWER TRANSMISSION PRODUCTS

A PRODUCT OF BW BORG-WARNER

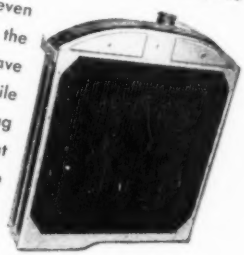
Free Wheeling Clutches

MORSE CHAIN COMPANY • DETROIT 8, MICHIGAN

The LONG STORY

RADIATORS SINCE 1903

Long Manufacturing Company had a good radiator 'way back in 1903. It cooled the unpredictable engines of that era so efficiently that it was widely accepted, even then. Moving to Detroit, the auto capital, in 1910, we have worked with the automobile producers ever since, helping solve the problems of heat exchange. We'll be glad to help you, too.



CLUTCHES SINCE 1922

Long introduced the first really efficient, easily operated automotive clutch in 1922. Today, this clutch equips millions of cars, trucks, buses, tractors. Long semicentrifugal clutches, in a wide range of sizes and capacities, give smooth, trouble-free operation.

LONG MANUFACTURING DIVISION, BORG-WARNER CORPORATION, DETROIT 12 and WINDSOR, ONTARIO.

LONG

CLUTCHES • RADIATORS • OIL COOLERS

The Strong Silent Type

When it comes to performance, Ingersoll Clutch Discs speak for themselves. In positive gripping power with great resistance to wear. In quick, smooth pick-up with super-quiet operation. That's because *only* Ingersolls are made of TEM-CROSS Steel. The steel that's cross-rolled to form an interlocking mesh-grain, and specially tempered for extra toughness.

To be sure of strength and quietness, let your specifications read—"Ingersoll Clutch Discs." INGERSOLL Steel Division, Borg-Warner Corporation, New Castle, Indiana.

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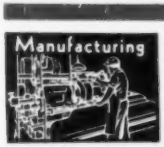
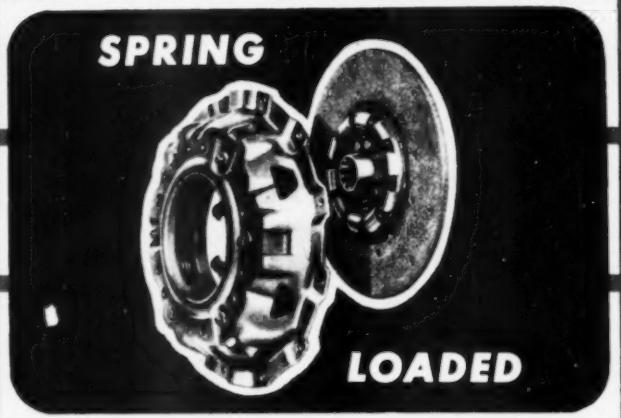
INGERSOLL
CLUTCH DISCS

JUST THE RIGHT

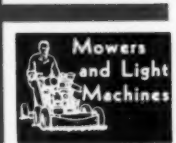


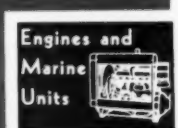


ROCKFORD CLUTCHES

Your power control and transmission requirements, whatever they may be, will benefit from clutches that are exactly suited to their needs. Thousands of manufacturers — in hundreds of industries — have found that the right ROCKFORD CLUTCHES increase the efficiency of their machines. Our engineers are not restricted to any one type or size of clutch — but are free to specify one that is best suited to the particular operating essentials of your product. Write for our latest bulletin that shows typical installations of ROCKFORD CLUTCHES and POWER TAKE-OFFS, with diagrams of unique applications, capacity tables, dimensions and specifications.

ROCKFORD CLUTCH DIVISION
BORG-WARNER
315 Catherine Street, Rockford, Illinois





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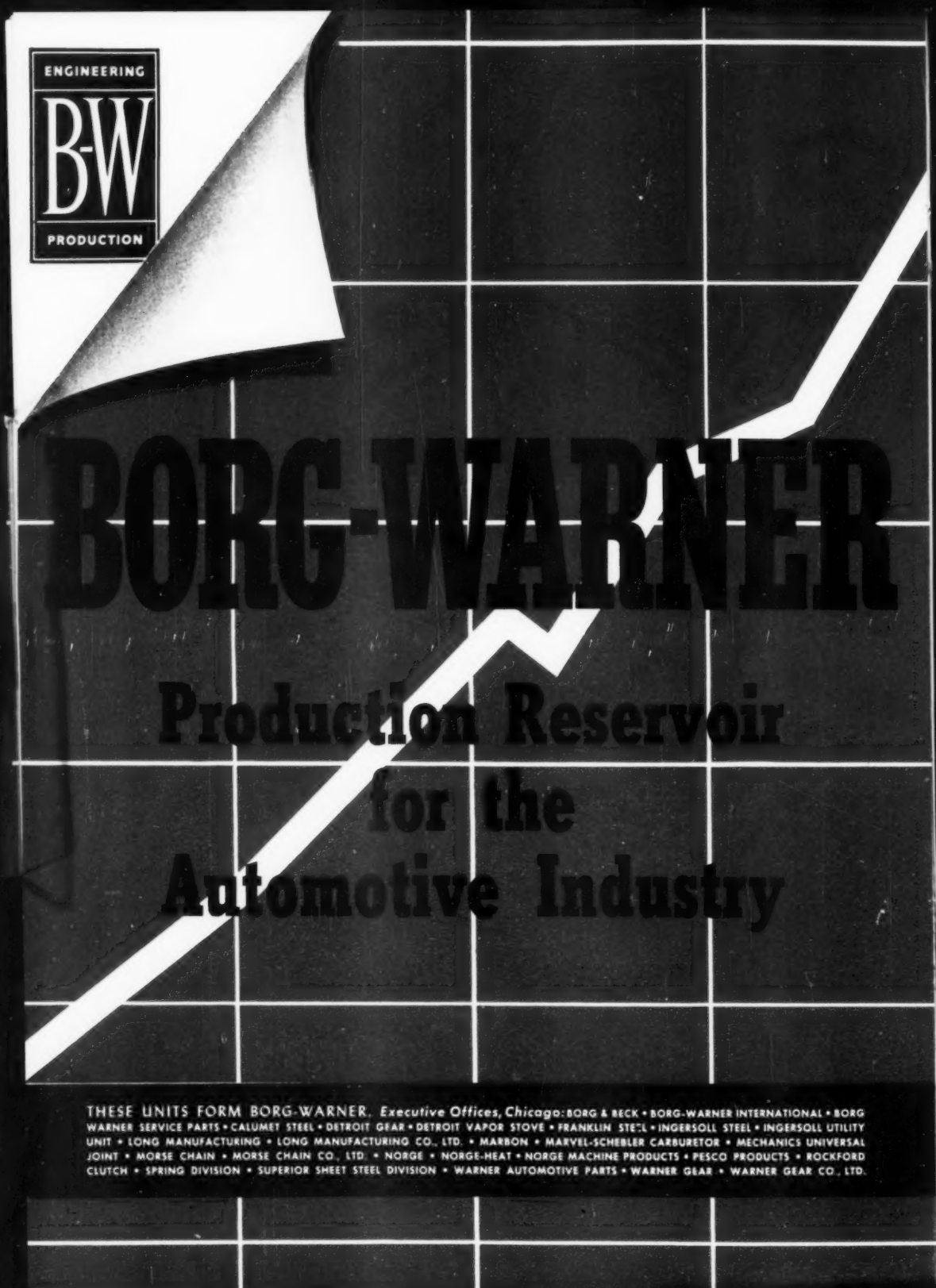
Division of BORG-WARNER CORPORATION, Auburn, Indiana; Detroit, Michigan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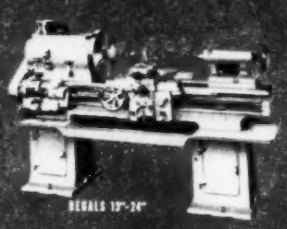
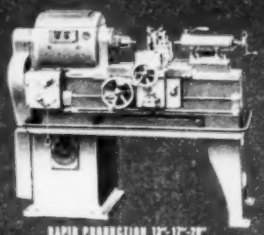
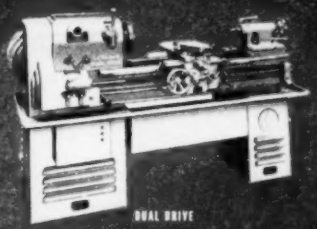


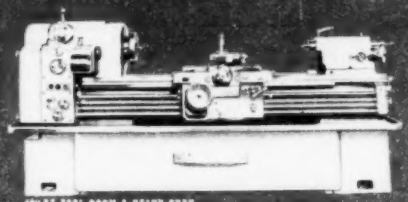
REGALS 13"-24"



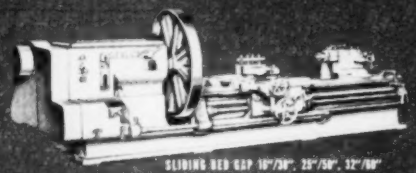
RAPID PRODUCTION 13"-17"-20"



DUAL DRIVE

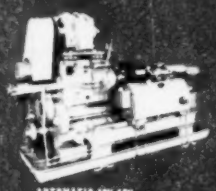


16" AT TOOL ROOM & HEAVY DUTY

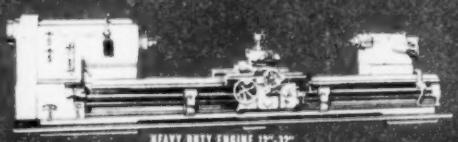


SLIDING BED GAP 16"/26", 25"/50", 32"/60"

More Lathes mean Greater Choice, Better Buy!



AUTOMATIC 12"-16"

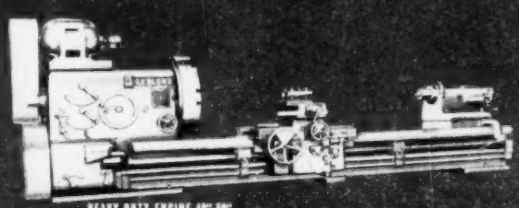


HEAVY DUTY ENGINE 12"-32"

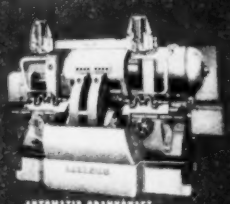
No. 2 CUTTER GRINDER

UNIVERSAL CRANKSHAFT 20"-30"

HOLLOW SPINDLE 10"-30"



HEAVY DUTY ENGINE 40"-50"



AUTOMATIC CRANKSHAFT

THE R. K. LeBLOND MACHINE TOOL CO., CINCINNATI 8, OHIO

LARGEST MANUFACTURER OF A COMPLETE LINE OF LATHES

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FOR REMOVING METAL

▲ Three Vertical No. 15 Units, 5-station automatic index table, automatic cycle for Drilling, Reaming, Countersinking, Boring, Chamfering and Tapping.

Unit-Type machining around a common index table, faster cycling, hydraulic actuation, engineered timed cycle control — these features in new **BARNESDRIL** Production Machines actually give you $\frac{1}{3}$ more productivity than ever before. In some cases even 50% gain has been proved.

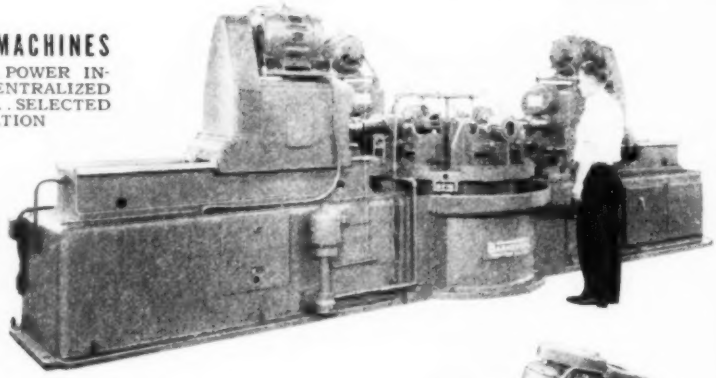
For, Unit-Type operation combines multiple machining cuts into a single production set-up — with savings in equipment, floor space and investment.

Automatic cycling shortens operation time and eliminates wasteful loading and

HIGH PRODUCTION UNIT-TYPE MACHINES

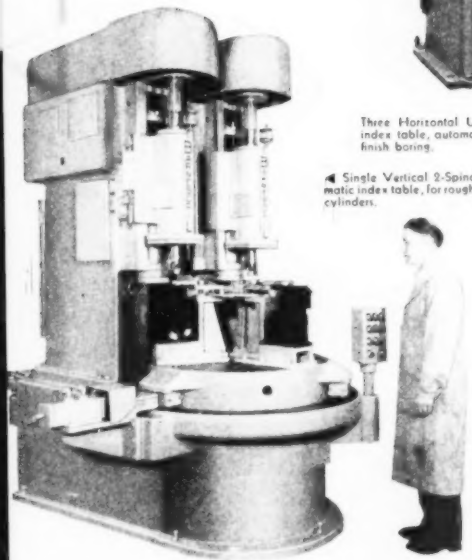
ANTI-FRICTION SPINDLE BEARINGS... POWER INDEXING OR DRUM TYPE TABLES... CENTRALIZED CONTROL PANEL... INFINITE FEEDS... SELECTED SPEEDS... AUTOMATIC LUBRICATION

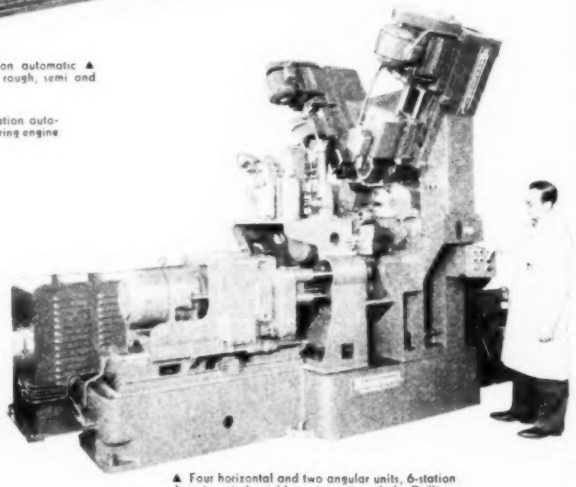
Write for Bulletin B1509.



Three Horizontal Units, 4-station automatic ▲ index table, automatic cycle for rough, semi and finish boring.

◀ Single Vertical 2-Spindle Unit, 3-station automatic index table, for rough and finish boring engine cylinders.





▲ Four horizontal and two angular units, 6-station drum-type index table, automatic cycle for Drilling, Reaming, Chamfering, Facing and Tapping.

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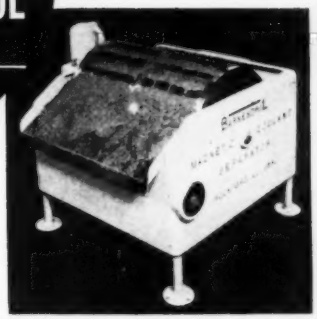

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▲ New Improved models offer floor saving features, light weight, and reduced power consumption. No. 4 shown operates with 1/20 H.P. Motor, 40 gallons per minute capacity. Other capacities available from 5 to 350 gallons.

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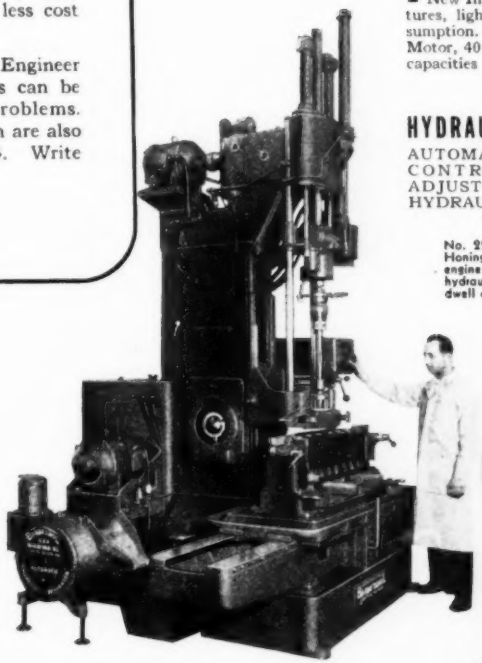
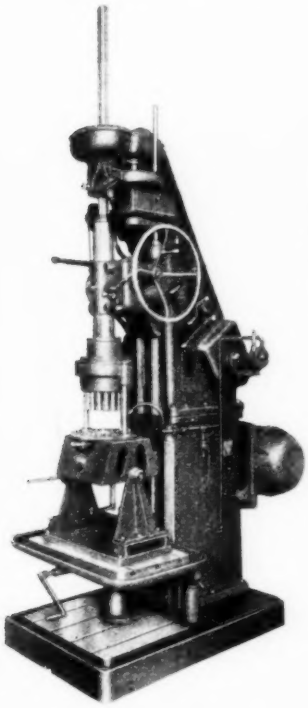
No. 224 Single Spindle Hydraulically Reciprocated Honing Machine tooled and equipped for honing small engine cylinders up to 4" diameter. Machine has hydraulic step-feed hone expansion and hydraulic dwell at bottom of stroke. ▼



No. 4014 Single Spindle Hydraulically reciprocated Honing Machine, tooled and equipped for honing diesel locomotive cylinders. ▲



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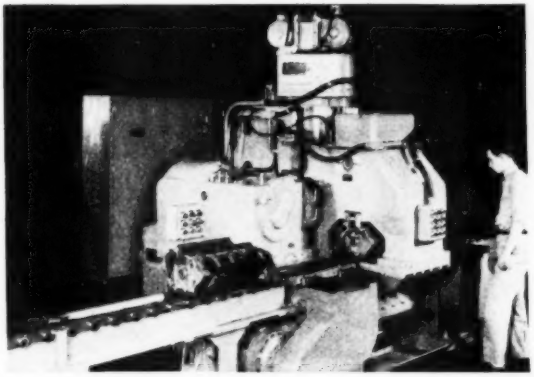
HOW to Get Better Milling Methods on High Production Work

With Sundstrand "Engineered Production"

Basically, there are two approaches to solving milling production problems, (1) obtaining standard machines, then trying to process parts over these machines as economically as possible, (2) designing the most profitable processing method, then obtaining machines to suit this method — standard or semi-standard machines, if possible, or entirely special machines, if necessary . . . This latter method is Sundstrand "Engineered Production" . . . the most practical approach to economical milling. Here are five examples of practical solutions to high production milling on special machines. "Engineered Production" also results in most economical methods on low and medium size production. Call in a Sundstrand engineer. There is no obligation for his service.

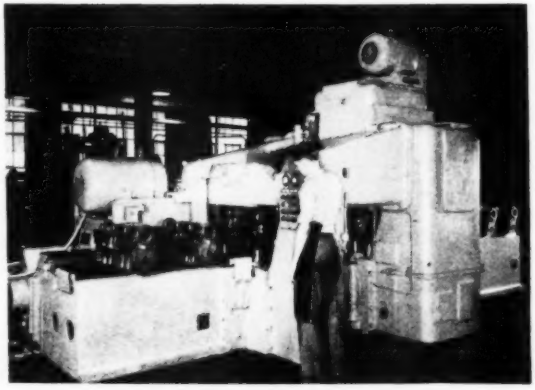
Milling Both Ends and Bearing Faces of Cylinder Block in one Automatic Cycle

This special Sundstrand Rigidmil mills both ends and bearing faces of a cylinder block with one automatic locating and clamping of the part. The block enters loading position onto hydraulically operated shuttle. In an automatic cycle started from push button station, the block is shuttled into a rise and fall fixture where it is automatically clamped. Two 15 HP opposed horizontal heads feed crosswise to face mill both ends of block; at end of stroke, cutters retract and heads rapid return. Fixture then feeds downward to straddle mill main bearings. When straddle milling operation is completed, fixture rises, and clamps are released, ending the cycle. At start of next automatic cycle, the finished block is shuttled out the opposite side of fixture as another rough block enters.



Process Type Rigidmil Works on 2 Blocks at Each Milling Station

This process type Sundstrand Rigidmil is designed to face mill the front end surface and straddle mill the main bearings of cylinder blocks. Four blocks are machined simultaneously and are shuttled through the machine automatically between milling operations. Operations performed as follows: two blocks move into first station and are automatically located and clamped. A two spindle horizontal head mills front ends. Clamps then release and same two blocks move to second station. After being located and clamped again the main bearings are straddle milled by a vertically fed head. Blocks are then unclamped and shuttled out of machine at a production rate of approximately 120 cylinder blocks per hour.

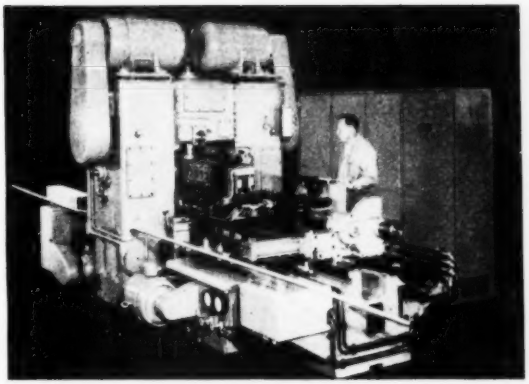


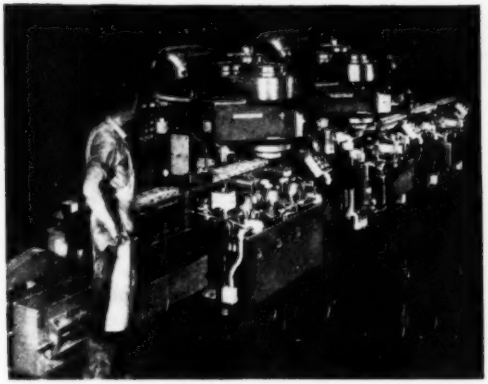
SUNDSTRAND MACHINE TOOL CO. ROCKFORD ILLINOIS U.S.A.

RIGIDMILS • FLUID-SCREW RIGIDMILS • AUTOMATIC LATHES • HYDRAULIC EQUIPMENT

6 Spindle Rigidmil with Automatic Loading, Clamping, Milling and Unloading Cycle Mills 4 surfaces on Cylinder Block

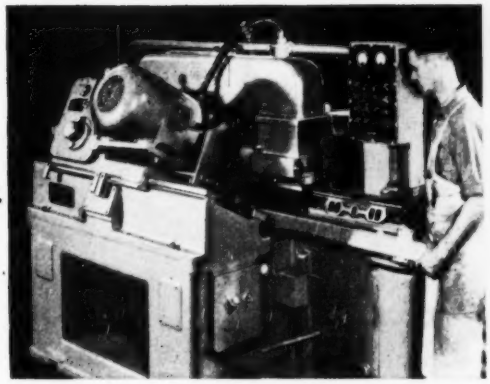
This Sundstrand Special Rigidmil has a 6-spindle bridge type head, through which automotive cylinder blocks are fed to rough mill the top, rough and finish mill pan rail, mill pump pad and valve tappet cover pad. One horizontal spindle at rear mills top of cylinder block. The 3 horizontal spindles in front rough and finish mill pan rail while two vertical spindles mill the fuel pump and valve tappet cover pad. Machine has incoming and outgoing conveyor with automatic loading, clamping and unclamping and unloading. Operator's only duties are to start and stop machine cycle, as the machine has a full automatic cycle. The single horizontal spindle and two vertical spindles are driven by a 50 HP motor. The remaining 3 horizontal spindles are driven by one 40 HP motor. TC tipped cutters are used on all spindles.





3 Station Transfer Type Rigidmil Mills Top, Bottom and Both Sides of Cylinder Head

This Sundstrand Special Rigidmil mills the top, contact face, manifold pad and accessory pad side of a cylinder head in one automatic handling. Part is shuttled into fixture of first unit and is automatically positioned and clamped. A 25 HP traveling head with one horizontal and one vertical spindle mills top and accessory pad side. The clamps release, and the part is shuttled into the second unit, a fixture which turns the part over. The part then enters fixture of third unit. Another 40 HP traveling head, with vertical spindle, mills the contact face. At the end of this operation, clamping pressure releases, and the part moves into the fixture of fourth unit. A 15 HP traveling head with horizontal spindle mills the manifold pad. When finished, part is shuttled to unloading station and onto conveyor.

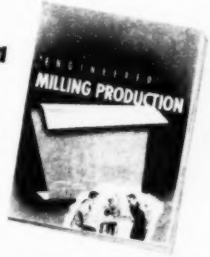


Special 6 Spindle Rigidmil Mills 4 Sides of Cylinder Head in One Automatic Cycle

This special Sundstrand Rigidmil mills angular face, pads on opposite side and at both ends of cylinder head simultaneously. Transfer of the part through 3 stations, locating and clamping in the working station and cycling of the heads is completely automatic. First, the work rolls onto loading station from conveyor. Then, in fully automatic cycle, part is shuttled into fixture and clamped; the single spindle angular head starts its horizontal feed to mill angular face — while the 5-spindle head feeds vertically to mill 3 side pads and a pad on each end. When all cuts have been completed, angular head cutter retracts to clear work and both heads rapid return. Clamps release finished part which is then automatically shuttled out of fixture as another rough part enters. Production is approximately 65 Cylinder Heads per hour.

FREE Additional Data

Write for more proof of the successful application of Sundstrand "Engineered" milling production. This 40 page book contains over 35 actual problem solutions together with interesting tooling diagrams. Write for your copy today. Ask for Bulletin No. **281.**



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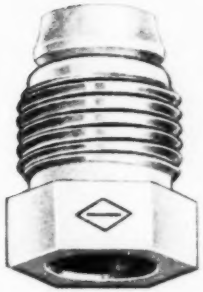

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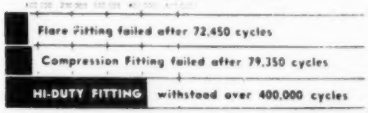
Comparative Vibration Test Results

NUMBER OF VIBRATIONS IN CYCLES


Flare Fitting failed after 72,450 cycles
Compression Fitting failed after 79,350 cycles
HI-DUTY FITTING withstood over 400,000 cycles

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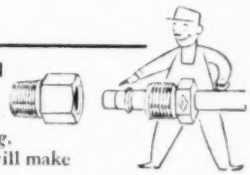
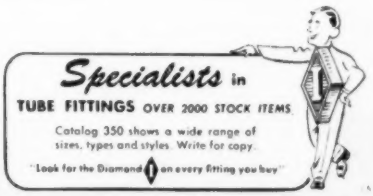
Sleeve shears off at groove when nut is tightened and *becomes attached to tubing*, creating a union joint which will make repeated reconnections.

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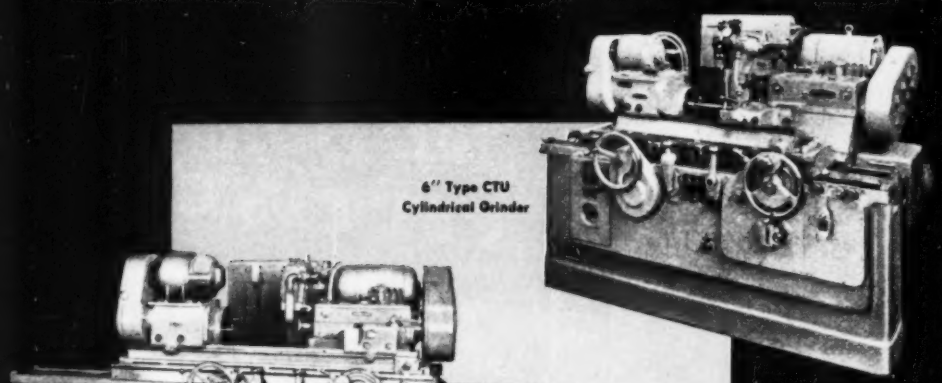
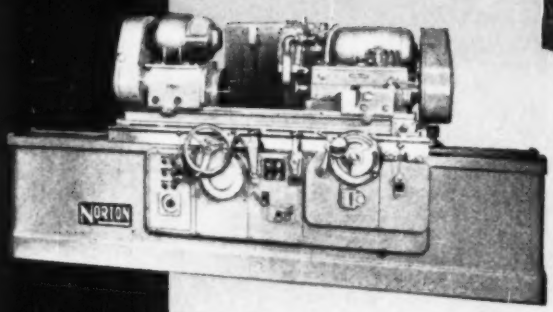
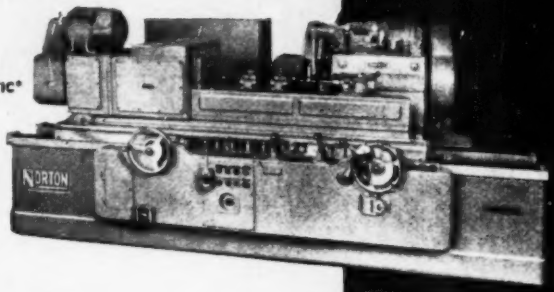


6" Type CTU
Cylindrical Grinder



10" Type CTU
Cylindrical Grinder



No. 2 CAM-O-MATIC*
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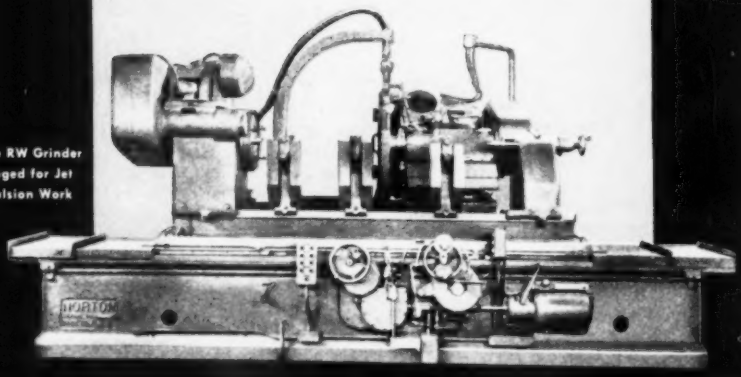

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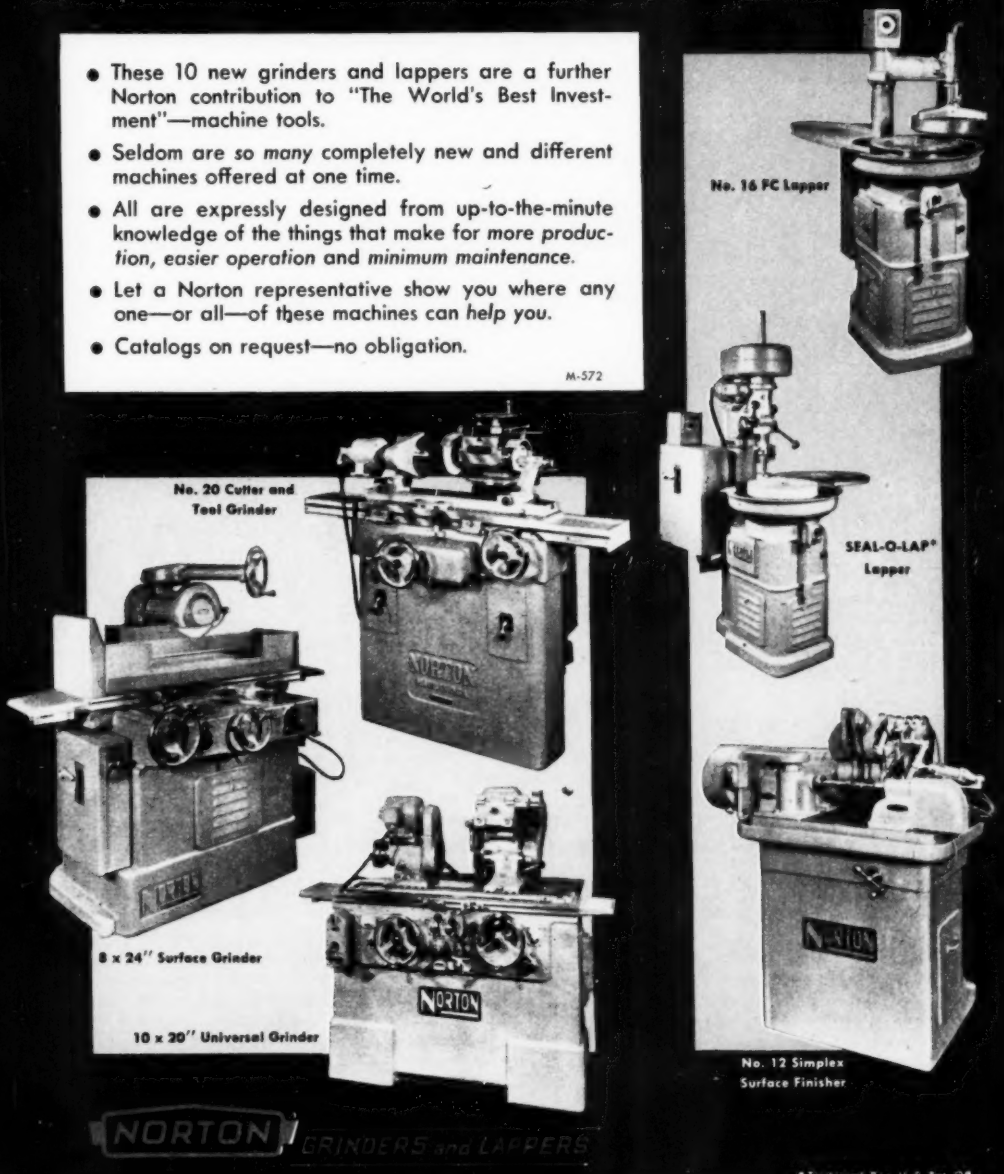
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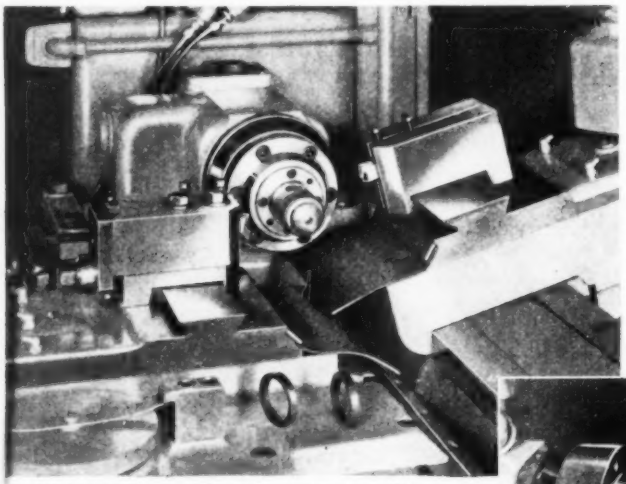
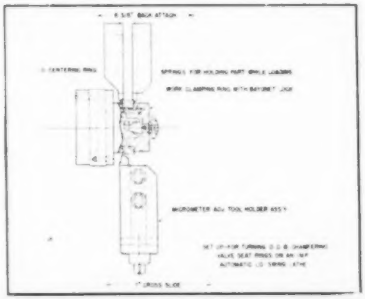
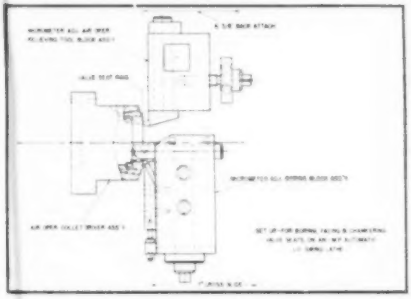
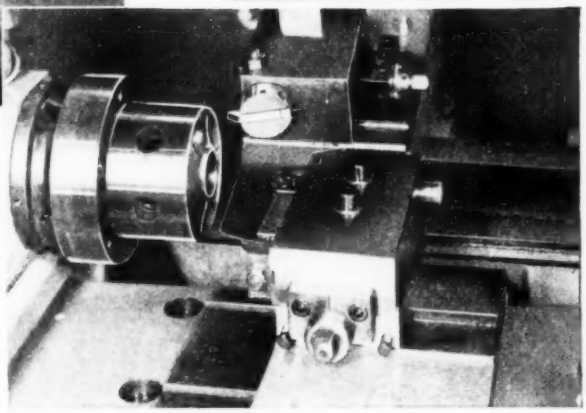


First operation machine ◀ (left) and tooling (right) ▶





Second operation machine (right) ▶ and tooling ◀ (left)



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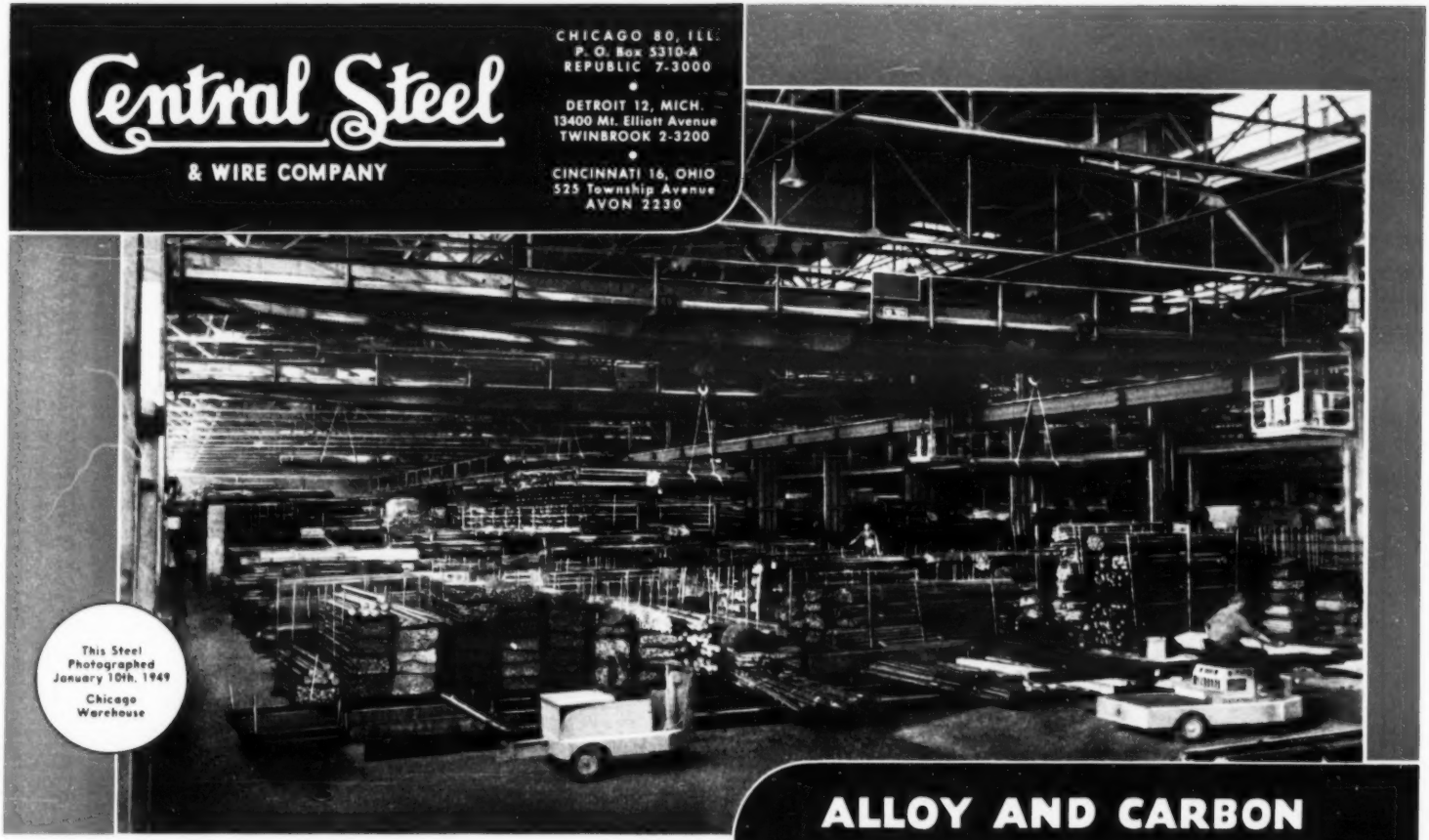

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March 15, 1949 Volume 100, No. 6

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for the
1949 Statistical Issue

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RYERSON STEEL

NEWS *of the* AUTOMOTIVE INDUSTRIES

Vol. 100, No. 6 **March 15, 1949**

Lincoln and Mercury To Have Hydra-Matic

We understand on good authority that Ford Motor Co.'s Lincoln-Mercury Div. has negotiated an agreement with GM for the use of the Hydra-Matic transmission on Lincoln and Mercury cars. The details of the agreement have not been revealed, but it is understood that GM will furnish the unit to Ford beginning sometime in early summer, possibly June. GM's Detroit Transmission Div. is currently near completion of a new plant near the outskirts of Detroit which will permit greatly expanded production of the Hydra-Matic. The revelation that Ford will adopt the Hydra-Matic for Lincoln and Mercury follows closely on the heels of a report that the company has thrown out its development work with a major supplier on a torque converter. The Hydra-Matic will be offered on the Lincoln first, and will later be available on the Mercury. It is not known what the unit will be called when installed on L-M cars.

Others Fail to Follow GM Price Reduction

So far there has been no indication that any other company intends to immediately follow GM's lead in cutting prices. It is believed, however, that some price adjustments will be made by Ford this spring. Even before GM reduced prices, it was known that Ford was contemplating some price action a little later, but it was understood that the adjustments would be slightly upward on some models and downward on others. It is now believed that any adjustments will be entirely in the downward direction. What the rest of the industry will do is still an open question.

New K-F Hard Top Model Is Highest Priced in Line

The Kaiser-Frazer Corp. has set a price of $3472, factory delivered basis, on its new model Virginian, a hard-top sports model resembling a convertible in styling. Overdrive and white sidewall tires are included as standard equipment, but transportation, state and local taxes are extra. The Virginian is $482 higher than the next lower-priced model, the Frazer Manhattan.

Packard Pays Best Dividend in 19 Years

The Packard Motor Car Co. recently declared a dividend of 25 cents a share, said to be the company's biggest in nearly 19 years. George T. Christopher, Packard president and general manager, stated that indications are that last year will show as one of the most successful Packard has enjoyed since starting to build cars, 50 years ago. Mr. Christopher pointed out that production last year of 98,898 units "came within a few weeks' reach" of the company's 109,518-car high set in 1937, and nearly doubled the 1947 total of 55,477 units.

Manufacturers Promote Used Car Sales

With the buyer's market already here for some automobile companies and rapidly approaching for others manufacturers are taking much greater interest in promoting used car merchandising among dealers. R. R. Nadel, manager of the used car department of Ford, reports that Ford dealers sold 92.6 per cent more used cars and trucks in 1948 than they did in the previous year. Nash recently appointed a used car manager to work with dealers in promoting used car retailing programs. Chevrolet is also planning a much more active program aimed at encouraging and assisting used car retail outlets.

AMERICAN DEBUT

The German Volkswagen, or People's Car, will make its first public appearance in the U. S. at the "Germany 49—Industry Show" to be held in the Museum of Science and Industry, New York City, from April 9-24. Since the end of the war, 20,000 Volkswagens have been produced in Germany. This car has a wheelbase of 94¼ in., and is powered by a four cyl engine.

March Vehicle Production May Set New Record

Early indications point to a record postwar production of cars and trucks during March. It is believed that the industry will go well over 500,000 units this month to set a new postwar record. With model changes out of the way all down the line, and with materials easing in supply, prospects are better than they have ever been since the end of the war. The picture is spotty with K-F

out of production the first week of March, and with its output very slow after that, and with Hudson reducing its ouput from 972 daily to 800. Willys also reduced production greatly early in March because of reduced demand. On the other hand, the rest of the industry is pushing for more production, and their efforts are expected to be more than enough to offset the slump by those who have reduced schedules. Ford has announced a substantial increase in production schedules for Ford and Mercury cars and Ford trucks during the next four months, although Lincoln production will be reduced. Studebaker Corp. has started to increase its production by 21 per cent which has required the hiring of 1800 new employes. Just out with its new models, Chrysler Div. is increasing production tempo as fast as it can.

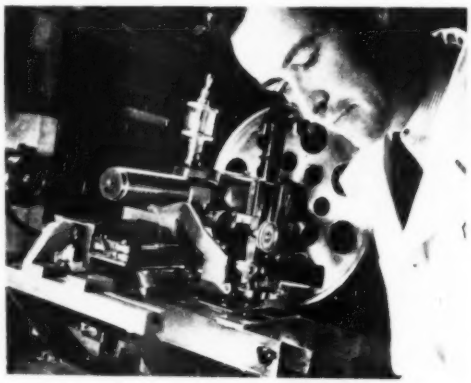
By the first of March, the industry was nearly 5½ per cent ahead of the same period last year in production of cars and trucks, although the percentage of passenger cars to trucks has increased materially. With more steel expected to be available a little later this year, there is little doubt that the industry can reach its goal of 10 per cent greater production than 1948, barring any serious labor trouble, military emergencies, or an economic slump of sizable proportions.

GM & Chrysler Cooperating On Surface Finish Specs

During a recent panel discussion of the SAE in Detroit, Roy P. Trowbridge, of GM's Research Laboratories, stated that at present GM and Chrysler are cooperating in an effort to produce a set of accurately-ruled geometric surface finish specifications which are to act as gage blocks for surface finish measurement similar to the Johansson blocks for dimensional measurement. All sets of the GM-Chrysler specimens will be replicas of one master set, Mr. Trowbridge stated, so that they will assure complete uniformity. He pointed out that the American Standards Association has provided a written standard for surface designations, with 30 preferred roughness height values and 17 waviness height values; however, this written standard allows for four different roughness height ratings.

Mr. Trowbridge says that any one of these ratings may be satisfactory if both the designer and shop are sure that the other is using the same rating, but that confusion would result if all of the four different roughness height ratings provided were used throughout the country. He also says that the problem of accurately measuring the unknown surfaces still exists.

RULING FOR RESEARCH



GM Research Laboratories has developed this ruling machine which can rule up to 10,000 lines per in. in gold master blocks in order to establish reproducible surface finish standards in the manufacture of highly finished mechanical sliding parts. Shown looking through the microscope attachment is Roy P. Trowbridge of the GM Research Laboratories.

Chrysler's 1948 Sales Hit All Time High

Attaining an all time high, dollar sales volume of the Chrysler Corp. and its wholly-owned U. S. subsidiaries amounted to $1,567,933,360 for 1948 as compared with $1,362,626,751 for 1947. Net earnings for 1948 were $89,187,240 as against $67,181,221 for 1947. Chrysler's U. S. and Canadian plants sold 1,064,759 passenger cars and trucks in 1948.

While announcing the financial results for 1948, Chrysler disclosed that its directors had recommended to the stockholders that the capital structure of the company be changed by restating the par value of its common stock from $2.50 a share to $25 a share by the transfer to capital account of an amount of its surplus accounts sufficient to bring the capital up to an amount equal to $25 for every share of common stock issued. The Board also recommended that the total number of authorized shares be boosted from 15 million to 20 million. The stockholders will vote on these recommendations on April 19.

Supplier to Manufacture Nash Automatic Drive

The latest information indicates that the automatic transmission that Nash has under development may be built by an outside supplier rather than by the company itself. It is understood that a recent chage in plans makes this a possibility. It is believed that the transmission will not be available this year, but will be offered early in 1950.

K-F Boosts Dealers' Discounts Six Per Cent

Effective April 1, The Kaiser-Frazer Corp. will increase its dealer discounts about six per cent, which will bring them to 24 to 28 per cent. Until the new discount structure goes into effect, the company will give a $200 trade-in allowance to dealers on each car sold from retail from the dealer's stock. Under the plan the $200 allowance is given on every 1949 Kaiser or Frazer sold at retail from stock in the form of an allowance on the purchase of a replacement car from the factory within seven days after the date of retail delivery.

GM Schedules New Body for Summer

The new "B" body which GM has under development for introduction later this year will have more interior room, according to reports in Detroit. The latest reports indicate that Fisher Body is trying to get production started on the new body by July. It will appear first on the Buick 40 series, currently out of production, and probably will later be used on Oldsmobile and Pontiac.

Shorter Wheelbase Plymouth $90 Under Standard Model

An analysis of the prices released by the Chrysler Corp. on the new Plymouth 111-in.-wheelbase car and others in the regular line fail to indicate accurately the price differential between the two lines. The reason is that the only price quoted for the shorter wheelbase model is for a three-passenger coupe which is not included in the standard Plymouth line. The price of $1295 has been estimated, however, at about $90 to $100 less than for a similar model in the standard line. It had been thought that Chrysler would make a definite attempt with the short wheelbase model to have a larger price differential and also to get below Ford and Chevrolet. However, the 111-in.-

NEWS *of the* AUTOMOTIVE INDUSTRIES

HEADED FOR THE DEEP FREEZE

Recently taking off for super-cold winterization test in Alaska, this USAF North American F-86 jet fighter carried drop tanks under its wings. This plane will be the first of its type to go through the USAF Arctic Testing Div. program of Ladd Field, Fairbanks, Alaska, where the temperature is expected to drop to —50F this winter.

wheelbase three-passenger Plymouth coupe compares with $1158 for the Ford six and $1260 for the Chevrolet of the same model.

Standard Planning Midget Triumph

Standard Motors of Great Britain is reportedly planning to produce a small version of its Triumph automobile. The new model will be lighter than any previously made by Standard, including the light Vanguard, according to Sir John Black, Standard's deputy chairman.

Two New International Diesel Trucks

The International Harvester Co. has announced two new Diesel trucks, Models KBD-12 and KBRD-14, with GVW ratings of 31,500 lb, and 35,000 lb respectively. The KBD-12 is available in four wheelbases, 155, 161 179 and 215 in. The KBRD-14 model is available with 161, 179 and 215-in. wheelbases.

Army Asks for Bids On Military Trucks

There are signs of increased activity in purchases of military trucks by the Armed Services. So far as can be discovered no actual contracts of any important size have been awarded, but preliminary negotiations are picking up speed. The Armed Services have asked for more than $82 million worth of trucks under the following breakdown: 6320 ¼-ton, $15.8 million; 2663 ¾-ton, $11,450,000; 6705 2½-ton, $42,241,000; 589 five-ton, $11,191,000; 1228 light sedans, $1,596,000. It is understood that Army Ordnance will soon ask Reo, International, Ford, Studebaker and GMC for competitive bids on more than 3000 2½-ton trucks of a new design that will take the place of trucks between two- and four-tons in current models. It is also reported that specifications and parts procedure are being prepared for a new five-ton model for which $11 million will be available.

K-F Starts Production of Utility Models

The Kaiser-Frazer Corp. began pilot production of its new utility cars March 7, two weeks ahead of the date originally scheduled. The cars are called the Traveler and the Vagabond, and are identical in appearance to the Kaiser four-door sedan, but have a fold-down rear seat and transverse folding doors in back to make it a utility vehicle. It is believed that K-F will try to make the utility car the volume model in its line. Production on the regular K-F line will be resumed at a later date.

Australian Company to Make Gregoire

A new company has been formed in Australia by L. J. Hartnett of Melbourne, formerly general manager of General Motors-Holden's Ltd. (Australia), to build the all-aluminum Gregoire automobile.

New K-F Plant in Holland Goes Into Production

Kaiser-Frazer's new assembly plant at Rotterdam, Holland, has started production. The plant has an initial output of 6000 units a year. A large portion of the production there is earmarked for export markets.

Cummins Announces a New Diesel Engine

The Cummins Engine Co., Columbus, Ind., has announced a new Diesel engine for automotive applications: model HR BS-600, developing 225 hp at 1800 rpm. This engine has a 5¼ in. bore and a 6 in. stroke, with a piston displacement of 743 cu in.

(*Turn to page* 251, *please*)

METAL MIDGET MUSTANG

Developed from the Goodyear racing plane "P-Shooter", this new all-metal Midget Mustang, a combination racing plane and fast personal transport, will be made by the Schweizer Aircraft Corp., Elmira, N. Y. Powered by a Continental C85-8FJ engine, and said to have a top speed of over 200 mph, it has a wing span of 18 ft. 6 in., a length of 16 ft. and a height of 4 ft. 6 in.

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NEW DEPARTURE · Division of GENERAL MOTORS · BRISTOL, CONNECTICUT

AUTOMOTIVE INDUSTRIES

31st ANNUAL STATISTICAL ISSUE

1948 STATISTICAL SUMMARY . . .

PRODUCTION—U.S.

Passenger Cars	3,909,270
Trucks	1,363,856
Buses	12,299
Trailers	44,826
Civil Aircraft	7,302
Civil Aircraft Engines	9,059

WHOLESALE VALUE OF PRODUCTION

Passenger Cars	$4,794,600,000
Trucks and Buses	1,798,500,000
Trailers (Shipments)	139,973,623
Parts and Accessories	2,620,000,000
Civil Aircraft	165,441,453
Civil Aircraft Engines	30,017,250

NEW REGISTRATIONS (SALES TO CONSUMERS)

Passenger Cars	3,490,952
Trucks	1,035,174

TOTAL REGISTRATIONS

Passenger Cars	32,911,801
Trucks and Buses	7,296,495
Civil Aircraft	96,593

WHOLESALE AND RETAIL AUTOMOTIVE OUTLETS

Wholesalers	8,338
Car and Truck Dealers	43,004
Independent Repair Shops	59,908

EXPORTS (VALUE)

New Passenger Cars	$279,837,012
New Trucks and Buses	343,160,770
Aircraft and Parts	156,847,414

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Hourly and Weekly Earnings

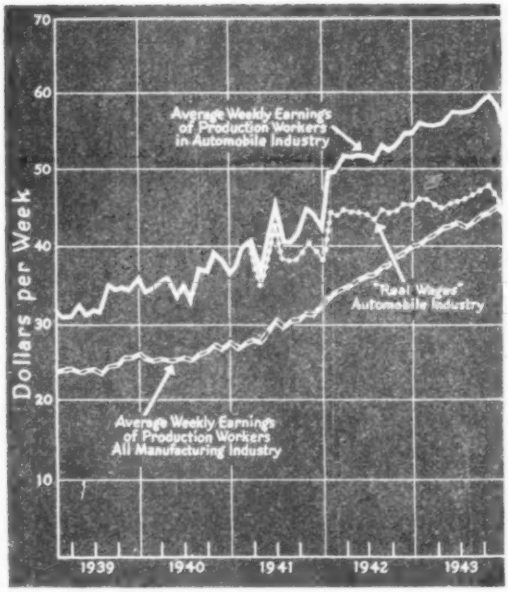
By Production Workers in the Automobile

Automobile Industry

Year	Average Earnings Hourly	Average Earnings Weekly	Average Weekly Hrs. per Worker
1941			
January	$ .969	$37.69	38.9
February	.974	40.13	41.2
March	.982	40.65	41.4
April	.983	36.37	37.0
May	1.014	41.57	41.0
June	1.063	45.71	43.0
July	1.063	40.50	38.1
August	1.047	40.62	38.8
September	1.074	41.35	38.5
October	1.089	44.21	40.6
November	1.114	43.78	39.3
December	1.134	42.41	37.4
1944			
January	$1.255	$58.86	46.9
February	1.257	58.13	46.3
March	1.261	58.37	46.3
April	1.262	58.56	46.4
May	1.266	57.68	45.5
June	1.275	58.48	45.9
July	1.291	56.43	43.7
August	1.261	56.90	45.1
September	1.287	55.98	43.5
October	1.270	57.85	45.6
November	1.280	58.23	45.5
December	1.279	58.41	45.7
1946			
January	$1.230	$46.19	37.5
February	1.248	43.01	34.5
March	1.264	46.75	37.0
April	1.302	48.72	37.4
May	1.325	48.05	36.3
June	1.347	49.32	36.6
July	1.354	51.15	37.8
August	1.373	53.80	39.2
September	1.385	53.37	38.5
October	1.376	53.41	38.8
November	1.394	53.83	38.6
December	1.395	54.98	39.4
1947			
January	$1.390	$54.13	38.9
February	1.399	54.29	38.8
March	1.396	55.49	39.7
April	1.406	54.14	38.5
May	1.463	55.96	38.3
June	1.485	57.48	38.7
July	1.496	56.44	37.7
August	1.500	55.76	37.2
September	1.515	59.35	39.2
October	1.526	60.30	39.5
November	1.542	61.70	40.0
December	1.570	65.47	41.7
1948			
January	$1.538	$60.96	39.6
February	1.548	59.00	38.1
March	1.539	59.81	38.9
April	1.533	59.14	38.6
May	1.548	54.44	35.2
June	1.624	61.30	37.7
July	1.649	63.48	38.5
August	1.664	64.67	38.9
September	1.676	62.74	37.4
October	1.678	65.50	39.0
November	1.678	63.78	38.0
December			

Source: Bureau of Labor Statistics.

WEEKLY EARNINGS



Employment, Earnings and

In the Automobile Industry

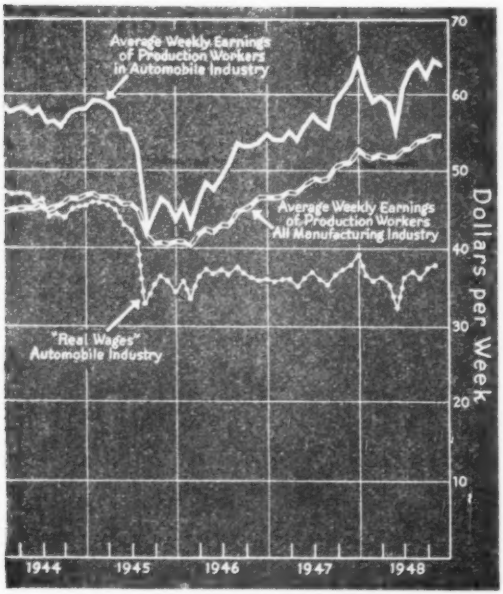
Year	Average Employment	Total Payrolls Add 000	Average Weekly Earnings	Average Weekly Hrs. per Worker
1932	257,000	$273,832	$21.22	31.2
1933	257,000	270,556	20.81	35.1
1934	380,000	467,480	23.24	33.2
1935	408,000	587,444	27.41	37.1
1936	430,000	671,528	29.75	38.5
1937	505,000	814,320	31.94	35.9
1938	306,000	458,328	30.45	32.9
1939	402,000	651,976	32.91	35.4
1940	465,000	824,098	35.76	37.7
1941	570,000	1,173,557	41.25	39.6
1942	510,000	1,345,678	51.94	44.4
1943	714,000	2,094,147	56.94	46.2
1944	732,000	2,186,076	57.82	45.5
1945	605,000	1,654,715	51.99	41.3
1946	637,000	1,730,996	50.22	37.6
1947	757,000	2,369,985	57.54	39.0
1948	768,000	2,670,000	60.98	38.1

Source: Automobile Manufacturers Association and Bureau of Labor Statistics.

and Hours Worked Per Week

and All Manufacturing Industries

AND "REAL WAGES"



Hours Worked—1932-1948

In All Manufacturing

Year	Average Hourly Earnings	Average Weekly Earnings	Average Weekly Hrs. per Worker
1932	$.458	$17.86	38.2
1933	.455	17.36	37.8
1934	.541	18.93	34.5
1935	.550	20.13	36.6
1936	.556	21.78	39.2
1937	.624	24.05	38.6
1938	.627	22.30	35.6
1939	.633	23.86	37.7
1940	.661	25.20	38.1
1941	.729	29.58	40.6
1942	.853	36.65	42.9
1943	.961	43.14	44.9
1944	1.019	46.08	45.2
1945	1.023	44.39	43.4
1946	1.084	43.74	40.4
1947	1.221	49.25	40.3
1948	†1.323	†52.96	†40.1

† Average of first eleven months
Source: Bureau of Labor Statistics.

All Manufacturing

Year	Average Earnings Hourly	Average Earnings Weekly	Average Weekly Hrs. per Worker
1941			
January	$ .683	$26.64	39.0
February	.685	27.47	40.1
March	.689	27.90	40.5
April	.702	28.08	40.0
May	.721	29.34	40.7
June	.732	30.23	41.3
July	.735	29.62	40.3
August	.736	30.25	41.1
September	.748	30.67	41.0
October	.761	31.35	41.2
November	.773	31.23	40.4
December	.783	32.18	41.1
1944			
January	$1.002	$45.29	45.2
February	1.003	45.47	45.3
March	1.006	45.64	45.3
April	1.013	45.55	45.0
May	1.017	46.02	45.3
June	1.017	46.24	45.4
July	1.018	45.43	44.6
August	1.016	45.88	45.2
September	1.032	46.24	44.8
October	1.031	46.94	45.5
November	1.035	46.85	45.3
December	1.040	47.44	45.6
1946			
January	$1.004	$41.15	41.0
February	1.002	40.58	40.5
March	1.035	42.15	40.7
April	1.058	42.88	40.5
May	1.071	42.51	39.7
June	1.084	43.31	40.0
July	1.093	43.38	39.7
August	1.112	44.99	40.5
September	1.126	45.39	40.3
October	1.130	45.73	40.5
November	1.139	45.79	40.2
December	1.148	46.96	40.9
1947			
January	$1.161	$47.10	40.6
February	1.170	47.29	40.4
March	1.180	47.69	40.4
April	1.186	47.50	40.0
May	1.207	48.44	40.1
June	1.226	49.33	40.2
July	1.230	48.98	39.8
August	1.236	49.17	39.8
September	1.249	50.43	40.4
October	1.258	51.05	40.6
November	1.269	51.35	40.5
December	1.279	52.74	41.2
1948			
January	$1.285	$52.07	40.5
February	1.287	51.75	40.2
March	1.289	52.07	40.4
April	1.292	51.79	40.1
May	1.301	51.86	39.9
June	1.316	52.85	40.2
July	1.332	52.95	39.8
August	1.349	54.05	40.1
September	1.362	54.19	39.8
October	1.365	54.54	39.9
November	1.371	54.47	39.7
December	1.378	55.01	39.9

Source: Bureau of Labor Statistics.

Cost of Commodities Needed for Living

Consumers' Price Indexes

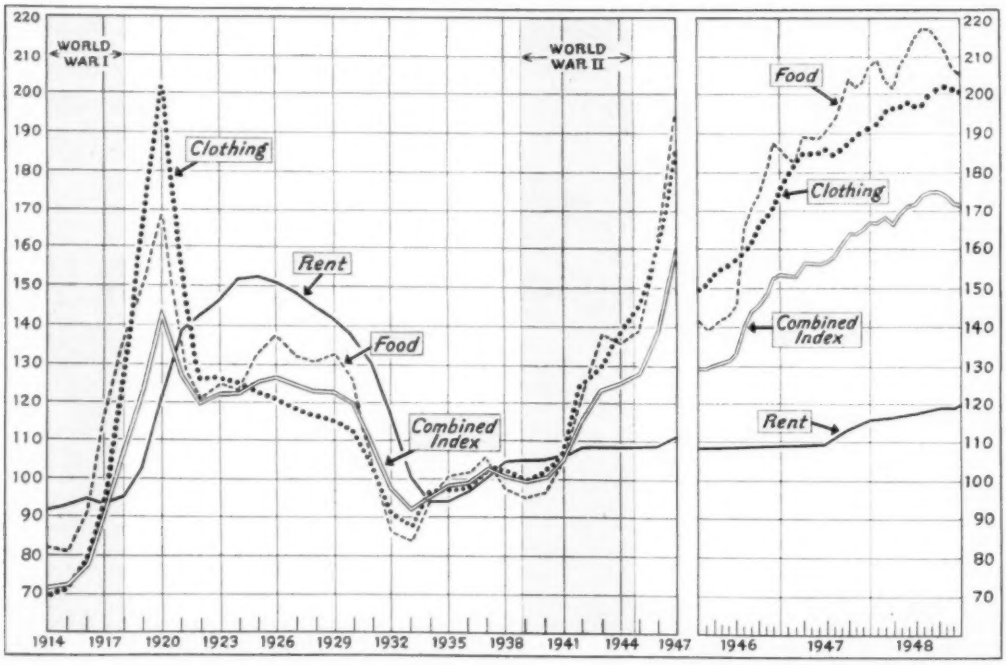
Based on Monthly Average of 1935-1939 = 100

Monthly Average	Combined Index	Apparel	FOOD					Fuel, Electricity and Ice	House Furnishings	Rent	Miscellaneous
			Total	Cereals and Baking Products	Dairy Products	Fruits and Vegetables	Meats, Fish and Poultry				
1929	122.5	116.3	132.5					112.5	111.7	141.4	104.6
1930	119.4	112.7	126.0					111.4	108.9	137.5	105.1
1931	106.7	102.6	103.9					108.9	99.0	130.3	104.1
1932	97.6	90.8	86.5					103.4	85.4	116.9	101.7
1933	92.4	87.9	84.1					100.0	84.2	100.7	98.4
1934	95.7	96.1	93.7					101.4	92.8	94.4	97.9
1935	98.1	98.8	100.4	101.8	97.5	99.7	99.9	100.7	94.8	94.2	98.1
1936	99.1	97.6	101.3	100.7	101.6	104.8	98.9	100.2	96.3	96.4	98.7
1937	102.7	102.8	105.3	103.3	105.4	107.9	106.8	100.2	104.3	100.9	101.0
1938	100.8	102.2	97.8	99.8	99.6	93.2	98.9	99.9	103.3	104.1	101.5
1939	99.4	100.5	95.2	94.5	95.9	94.5	96.5	99.0	101.3	104.3	100.7
1940	100.2	101.7	96.6	96.8	101.4	96.5	95.8	99.7	100.5	104.6	101.1
1941	105.2	108.3	105.5	97.9	112.0	103.2	107.5	102.2	107.3	106.2	104.0
1942	116.5	124.2	123.9	105.1	125.4	130.8	126.0	105.4	122.2	108.5	110.9
1943	123.6	129.7	138.0	107.6	134.6	168.8	133.8	107.7	125.6	108.0	115.8
1944	125.5	136.8	136.1	108.4	133.6	160.2	129.9	109.8	136.4	108.2	121.3
1945	128.4	145.9	139.1	109.0	133.9	177.1	131.2	110.3	145.8	108.3	124.1
1946	139.3	160.2	169.6	125.0	165.1	182.4	161.3	112.4	159.2	108.6	128.8
1947	159.2	185.7	193.8	155.4	186.2	199.4	217.1	121.2	184.4	111.2	139.9
1948‡	171.2	197.7	210.7	171.0	205.3	206.4	247.0	133.6	195.5	117.2	149.6
1948											
January	168.8	192.1	209.7	172.7	205.7	208.3	237.5	129.5	192.3	115.9	146.4
February	167.5	195.1	204.7	171.8	204.4	213.0	224.9	130.0	193.0	116.0	146.4
March	166.9	196.3	202.3	171.0	201.1	206.9	224.7	130.3	194.9	116.3	146.2
April	169.3	196.4	207.9	171.0	205.8	217.4	233.8	130.7	194.7	116.3	147.8
May	170.5	197.5	210.9	171.1	204.8	218.0	244.2	131.8	193.6	116.5	147.5
June	171.7	196.9	214.1	171.2	205.9	214.9	255.1	132.6	194.8	117.0	147.5
July	173.7	197.1	216.8	171.0	209.0	213.4	261.8	134.8	195.9	117.3	150.8
August	174.5	199.7	216.6	170.8	211.0	199.6	267.0	136.8	196.3	117.7	152.4
September	174.5	201.1	215.2	170.7	208.7	195.8	265.3	137.3	198.1	118.5	152.7
October	173.6	201.6	211.5	170.0	203.0	193.5	256.1	137.8	198.8	118.7	153.7
November	172.2	201.4	207.5	169.9	199.5	189.4	246.7	137.9	198.7	118.8	153.9
December	171.4	200.4	205.0	170.2	199.2	192.3	241.3	137.8	198.6	119.5	154.0

* Bureau of Labor Statistics. ‡—Eleven Months Data

CONSUMERS' PRICE INDEX FOR SELECTED COMMODITIES

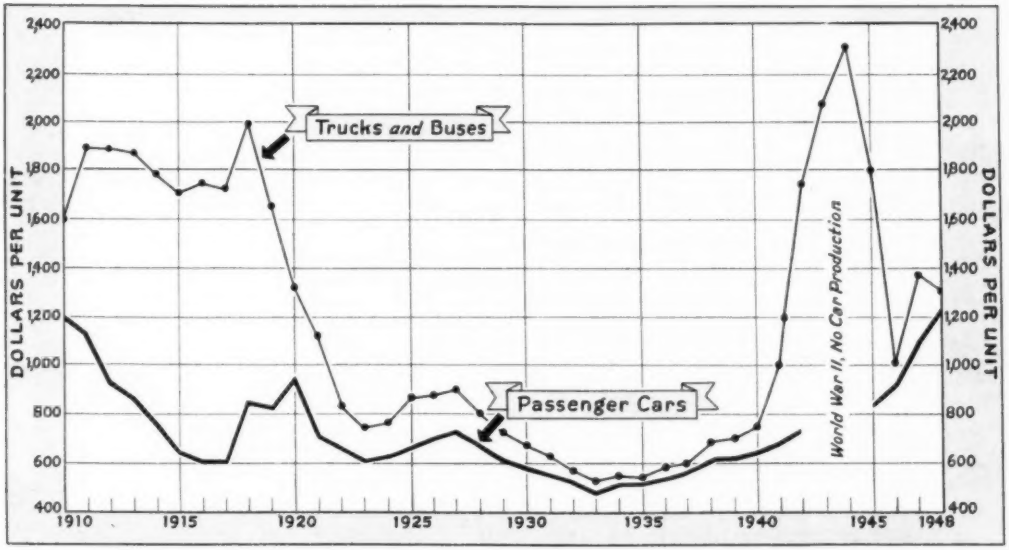
Based on Monthly Average of 1935-1939 = 100



THE FLUCTUATIONS OF MOTOR VEHICLE PRICES—1910-1948

Weighted Average Wholesale Price per Unit Sold

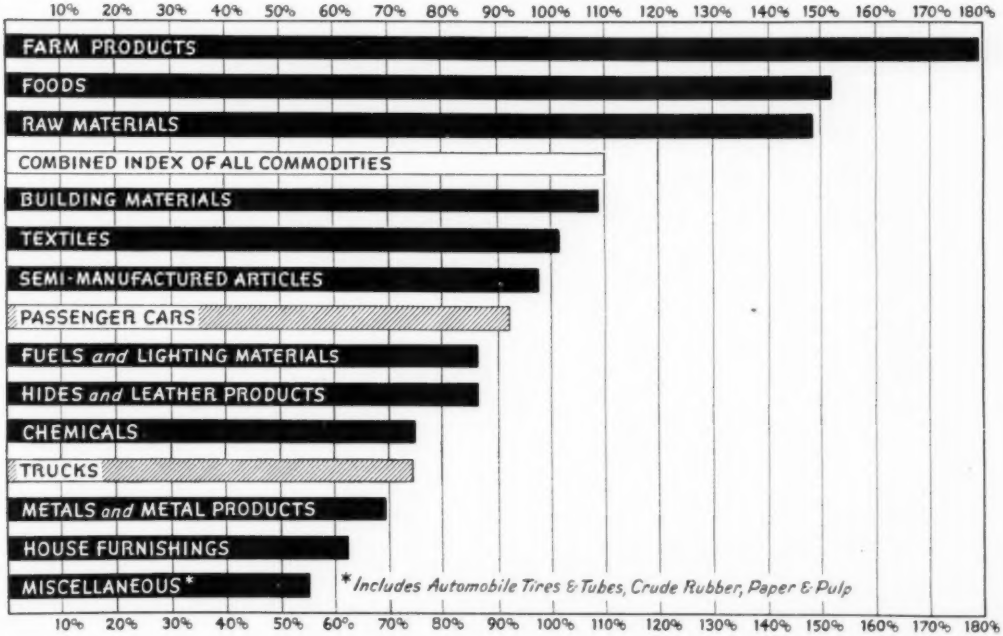
Based on Factory Sales of Motor Vehicles as Shown on Page 78



INCREASES IN MOTOR VEHICLE AVERAGE WHOLESALE PRICE—

1948 OVER 1940 COMPARED WITH WHOLESALE PRICE INCREASES OF OTHER ITEMS

Shown as Percentage Increase Computed from Bureau of Labor Statistics and Automotive Industries, Indexed on 1926 average as 100



21 Years of Strikes in Industry 1928-1948*

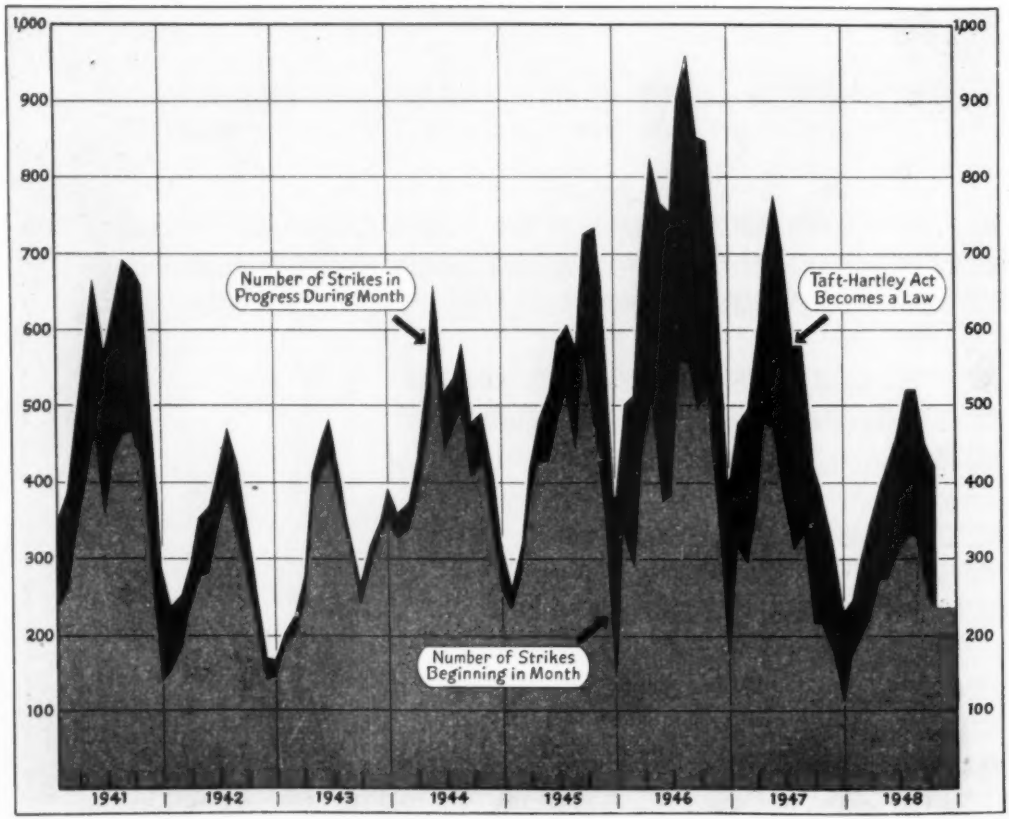
Number of Strikes, Workers Involved and Man-Days Idle

	Number of				Average Man-Days Lost	
	Strikes†	Workers Involved	Workers per Strike	Man-Days Idle	Per Strike	Per Worker Involved
1928	604	314,210	520	12,631,863	20,914	40
1929	921	288,572	313	5,351,540	5,811	19
1930	637	182,975	287	3,616,808	5,207	18
1931	810	341,817	422	6,893,244	8,510	20
1932	841	324,210	386	10,502,033	12,488	32
1933	1,695	1,168,272	689	16,872,128	9,954	14
1934	1,856	1,466,695	790	19,591,949	10,556	13
1935	2,014	1,117,213	555	15,456,337	7,674	14
1936	2,172	788,648	363	13,901,956	6,401	18
1937	4,740	1,860,621	393	28,424,857	5,997	15
1938	2,772	688,376	248	9,148,273	3,300	13
1939	2,613	1,170,962	448	17,812,219	6,817	15
1940	2,508	576,988	230	6,700,872	2,672	12
1941	4,288	2,362,620	551	23,047,556	5,375	10
1942	2,968	839,961	283	4,182,557	1,409	5
1943	3,752	1,981,279	528	13,500,529	3,592	7
1944	4,956	2,115,688	427	8,723,000	1,760	4
1945	4,750	3,467,000	730	38,025,000	8,005	11
1946	4,985	4,596,000	922	116,060,000	23,282	25
1947	3,693	2,165,000	586	34,559,000	9,358	16
1948P	‡2,820	‡1,885,000	‡668	‡32,075,000	‡11,374	‡17

‡ Data for Eleven Months.
P Preliminary data.

† Sum of strikes beginning in each month of year.
* Bureau of Labor Statistics.

STRIKES IN ALL INDUSTRY, BY MONTHS, 1941-1948



National Income and Corporate Profits

National Income

	National Income (Billions)	Net Corporate Profits † as Per Cent of National Income
1929	$87,400	10.2
1930	75,000	7.6
1931	58,900	1.9
1932	41,700	−5.8
1933	39,600	−6.3
1934	48,600	.8
1935	56,800	3.5
1936	64,700	5.4
1937	73,600	6.4
1938	67,400	4.9
1939	72,500	5.9
1940	81,300	7.7
1941	103,800	6.6
1942	136,500	6.0
1943	168,300	5.6
1944	182,400	5.8
1945	181,700	4.5
1946	179,300	4.3
1947	202,500	6.4
1948P	224,400	7.1

† After adjustment for inventory valuation.
P Preliminary data. Based on data from Department of Commerce.

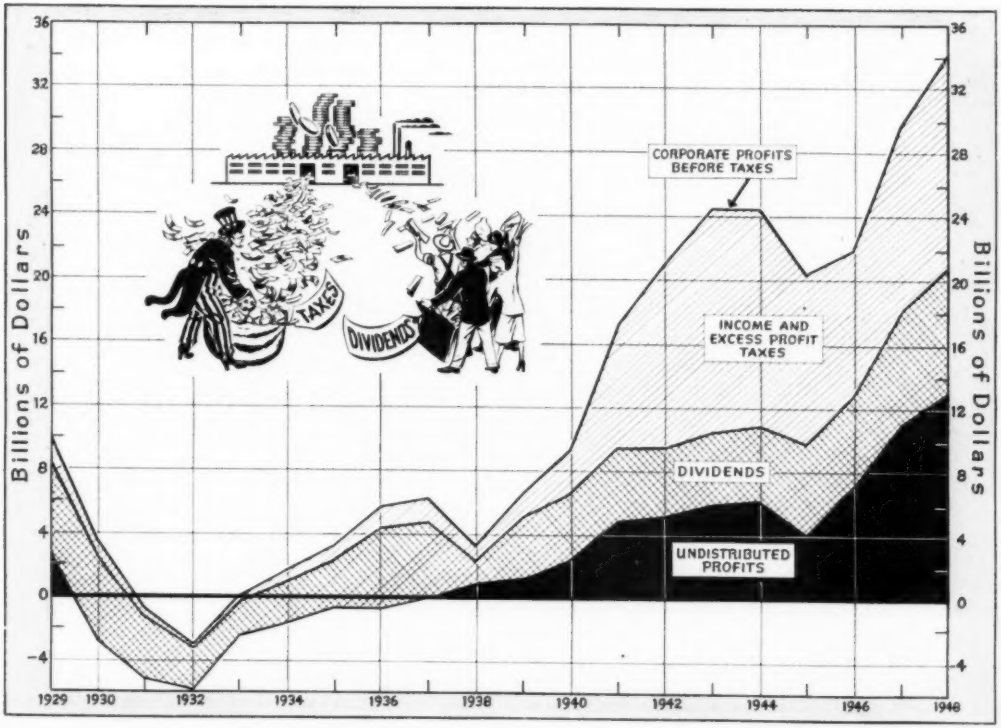
Corporate Profits Before and After Taxes

(Millions of Dollars)

Year	Corporate Profits Before Taxes	Taxes	Corporate Profits After Taxes	Dividends	Undistributed Corporate Profits
1929	$9,818	$1,398	$8,420	$5,823	$2,597
1930	3,303	848	2,455	5,500	−3,045
1931	−783	500	−1,283	4,098	−5,381
1932	−3,042	382	−3,424	2,574	−5,998
1933	162	524	−362	2,066	−2,428
1934	1,723	746	977	2,596	−1,619
1935	3,224	965	2,259	2,872	−613
1936	5,684	1,411	4,273	4,557	−784
1937	6,197	1,512	4,685	4,693	−8
1938	3,329	1,040	2,289	3,195	906
1939	6,467	1,462	5,005	3,796	1,209
1940	9,325	2,878	6,447	4,049	2,398
1941	17,232	7,846	9,386	4,465	4,921
1942	21,098	11,665	9,433	4,297	5,136
1943	24,516	14,153	10,363	4,477	5,886
1944	24,333	13,525	10,808	4,680	6,128
1945	20,389	11,641	8,748	4,720	4,028
1946	21,840	9,000	12,840	5,605	7,235
1947	29,784	11,709	18,075	6,880	11,195
1948P	32,200	12,500	19,700	7,700	12,000

− Deficit. = Withdrawals from surplus. P Preliminary data.
Source: National Income Division, Department of Commerce.

CORPORATE PROFITS, TAXES, DIVIDENDS



Production

PASSENGER CARS · TRUCKS · BUSES · TRACTORS · TRAILERS

102,000,000 Motor Vehicles Produced in 49 Years

Factory Sales and Their Wholesale Value, U.S. Plants

Year	PASSENGER CARS			TRUCKS AND BUSES			TOTAL	
	Number of Units	Wholesale Value	Average Wholesale Price	Number of Units	Wholesale Value †	Average Wholesale Price	Number of Units	Wholesale Value
1900	4,192	$4,899,443	$1,169				4,192	$4,899,443
1901	7,000	8,183,000	1,169				7,000	8,183,000
1902	9,000	10,395,000	1,155				9,000	10,395,000
1903	11,235	13,000,000	1,157				11,235	13,000,000
1904	22,130	23,357,692	1,055	700	$1,272,747	$1,818	22,830	24,630,439
1905	24,250	38,670,000	1,594	750	1,330,000	1,773	25,000	40,000,000
1906	33,200	61,460,000	1,851	800	1,440,000	1,800	34,000	62,900,000
1907	43,000	91,620,000	2,131	1,000	1,780,000	1,780	44,000	93,400,000
1908	63,500	135,250,000	2,129	1,500	2,550,000	1,700	65,000	137,800,000
1909	123,990	159,765,721	1,288	3,297	5,333,683	1,618	127,287	165,099,404
1910	181,000	215,340,000	1,189	6,000	9,660,000	1,610	187,000	225,000,000
1911	199,319	225,000,000	1,128	10,681	21,000,000	1,966	210,000	246,000,000
1912	356,000	335,000,000	941	22,000	43,000,000	1,954	378,000	378,000,000
1913	461,500	399,902,000	866	23,500	44,000,000	1,872	485,000	434,902,000
1914	548,139	420,838,378	768	24,900	44,219,096	1,776	573,039	465,057,474
1915	895,930	575,978,000	643	74,000	125,800,000	1,700	969,930	701,778,000
1916	1,525,578	921,378,000	604	92,130	161,000,000	1,747	1,617,708	1,082,378,000
1917	1,745,792	1,053,505,781	603	128,157	220,982,668	1,724	1,873,949	1,274,488,449
1918	943,436	801,937,925	850	227,250	434,168,992	1,910	1,170,686	1,236,106,917
1919	1,651,625	1,365,395,415	827	224,731	371,422,820	1,653	1,876,356	1,736,818,235
1920	1,905,560	1,809,170,963	949	321,789	423,249,410	1,315	2,227,349	2,232,420,373
1921	1,468,067	1,038,191,037	707	148,052	166,070,810	1,122	1,616,119	1,204,261,847
1922	2,274,185	1,494,513,991	657	269,991	226,049,658	837	2,544,176	1,720,563,649
1923	3,624,717	2,196,272,116	606	409,295	308,537,929	754	4,034,012	2,504,810,045
1924	3,185,881	1,970,096,559	618	416,659	318,580,580	765	3,602,540	2,288,677,139
1925	3,735,171	2,458,370,026	658	530,659	458,400,277	864	4,265,830	2,916,770,303
1926	3,783,987	2,640,064,519	698	516,947	452,123,435	875	4,300,934	3,092,187,954
1927	2,936,533	2,164,670,891	737	464,793	420,130,624	904	3,401,326	2,584,801,515
1928	3,815,417	2,576,489,623	675	543,324	437,132,258	804	4,358,759	3,013,621,881
1929	4,587,400	2,847,118,562	621	771,020	566,029,644	734	5,358,420	3,413,148,206
1930	2,784,745	1,645,398,523	591	571,241	389,436,690	682	3,355,986	2,034,835,213
1931	1,973,090	1,111,273,774	563	416,648	262,417,542	630	2,389,738	1,373,691,316
1932	1,135,491	618,291,168	544	235,187	136,193,336	579	1,370,678	754,484,504
1933	1,573,512	762,736,512	485	346,545	186,069,314	537	1,920,057	948,805,826
1934	2,177,919	1,147,116,195	527	575,192	320,143,667	557	2,753,111	1,467,259,862
1935	3,252,244	1,709,425,904	526	694,690	379,407,751	546	3,946,934	2,088,833,655
1936	3,669,528	2,015,646,217	549	784,587	462,820,474	590	4,454,115	2,478,466,691
1937	3,915,889	2,243,732,380	573	893,085	534,494,873	598	4,808,974	2,778,227,253
1938	2,000,985	1,236,802,411	618	488,100	334,147,530	685	2,489,085	1,570,949,941
1939	2,866,796	1,765,189,067	616	710,496	494,829,231	696	3,577,292	2,260,018,298
1940	3,717,385	2,370,654,083	638	754,901	567,820,414	752	4,472,286	2,938,474,497
1941	3,779,682	2,567,205,996	679	1,060,820	1,069,799,855	1,008	4,840,502	3,637,005,851
1942	222,862	163,813,559	736	818,662	1,427,456,801	1,744	1,041,524	1,591,270,360
1943‡	139	101,799		699,689	1,451,794,475	2,076	699,828	1,451,896,274
1944‡	610	446,704		737,524	1,700,928,939	2,306	738,134	1,701,375,643
1945	69,532	57,254,655	823	655,683	1,181,955,532	1,803	725,215	1,239,210,187
1946	2,148,699	1,979,781,084	921	940,851	1,043,247,276	1,109	3,089,550	3,023,028,360
1947	3,558,178	3,963,896,000	1,114	1,239,642	1,708,622,000	1,378	4,797,820	5,672,518,000
1948	3,909,270	4,794,600,000	1,226	1,376,155	1,798,500,000	1,302	5,285,425	6,593,100,000

Note: Table above includes sales of military vehicles. Prior to 1940 station wagons and other vehicles built on passenger car chassis are included with trucks. In 1940 and later years such vehicles built on passenger car chassis are included with passenger cars.

Values reported are for standard equipment only and exclude Federal excise taxes.

† A substantial part of the trucks reported comprises chassis only, without bodies; hence, the value of bodies for these chassis are not included.

‡ Actual value of passenger car factory sales for 1943 and 1944 are not available. Value figures are approximations based on the average value per unit in 1942. While production of passenger cars ended in February, 1942, some vehicles remained in factory stocks to be sold under rationing orders in 1943 and 1944.

Factory Sales in 1948

TRUCK FACTORY SALES of 1,363,856 Highest in History

PASSENGER CAR FACTORY SALES Exceeded Only by 1929

1948 Factory Sales to Domestic and Foreign Markets*

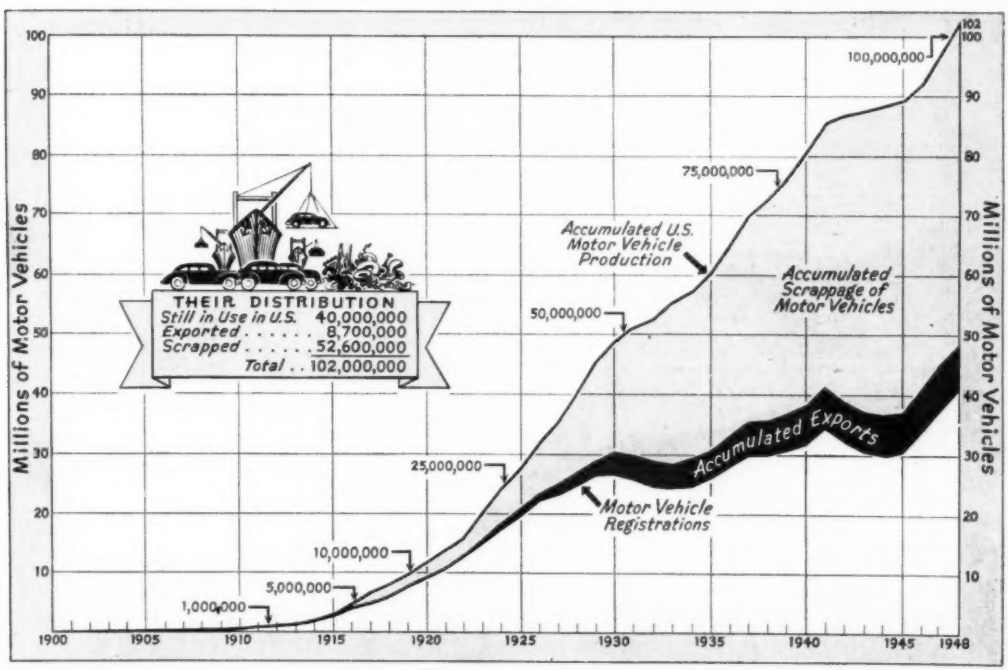
Passenger Cars, Trucks and Buses

From Plants Located in the United States

MONTH	Passenger Cars			Trucks			Buses		
	Domestic	Foreign	Total	Domestic	Foreign	Total	Domestic	Foreign	Total
January	285,373	19,708	305,081	83,893	15,307	99,200	1,080	302	1,382
February	256,753	18,094	274,847	88,889	18,165	107,054	763	338	1,101
March	327,198	22,800	349,998	118,572	22,034	140,606	1,217	213	1,430
April	288,356	19,715	308,071	111,911	17,052	128,963	910	146	1,056
May	209,591	15,870	225,461	96,909	14,880	111,789	1,168	120	1,288
June	293,582	18,824	312,406	101,755	15,817	117,572	892	176	1,068
July	334,736	22,028	356,764	98,249	18,531	116,780	947	65	1,012
August	328,194	20,628	348,822	97,222	14,538	111,760	675	96	771
September	282,458	18,712	301,170	94,196	17,028	111,224	1,051	92	1,143
October	361,867	21,888	383,755	91,296	16,073	107,369	600	79	679
November	346,999	17,441	364,440	89,030	14,807	103,837	460	85	545
December	360,986	17,469	378,455	90,667	17,035	107,702	763	61	824
Total	3,676,093	233,177	3,909,270	1,162,589	201,267	1,363,856	10,526	1,773	12,299
Per Cent of Total	94.04%	5.96%	100%	85.26%	14.74%	100%	85.58%	14.42%	100%

* Automobile Manufacturers Association.

100,000,000th. VEHICLE PRODUCED BY U. S. PLANTS IN AUGUST, 1948



Motor Vehicle Factory Sales—by Months

From Plants Located in the United States

PASSENGER CARS

	1948	1947	1946	1941	1940	1939	1938	1937	1936	1935	1934
January	386,081	246,605	56,367	413,012	363,120	281,465	155,505	309,094	297,692	227,554	112,754
February	274,847	267,015	57,794	397,067	339,595	243,000	139,380	296,788	224,211	273,576	186,774
March	349,999	301,525	85,810	416,016	356,351	299,703	174,065	403,879	342,870	359,410	279,274
April	308,071	314,765	132,631	378,906	364,096	273,409	176,078	439,980	416,431	387,158	288,355
May	226,461	284,357	166,942	421,631	327,873	237,870	154,958	425,432	384,921	305,547	273,764
June	312,406	307,124	141,090	423,008	289,228	246,704	136,531	411,414	375,337	294,182	261,280
July	356,764	279,631	209,180	347,907	174,218	150,738	106,841	360,400	371,922	274,344	223,094
August	348,822	261,158	247,261	79,343	47,804	61,407	58,624	311,456	209,351	181,130	183,500
September	301,179	307,942	232,280	188,387	223,583	161,625	65,159	118,671	90,101	56,097	125,040
October	383,755	315,969	283,586	296,554	421,777	251,819	187,494	298,662	190,242	213,310	84,003
November	364,440	305,148	269,081	258,631	408,817	285,252	320,344	295,328	341,085	336,914	49,020
December	378,455	366,939	266,865	180,210	400,913	373,804	326,006	244,385	425,368	343,022	111,061
Total	3,909,270	3,558,178	2,148,677	3,779,682	3,717,385	2,866,796	2,000,985	3,915,889	3,669,528	3,252,244	2,177,919

TRUCKS AND BUSES

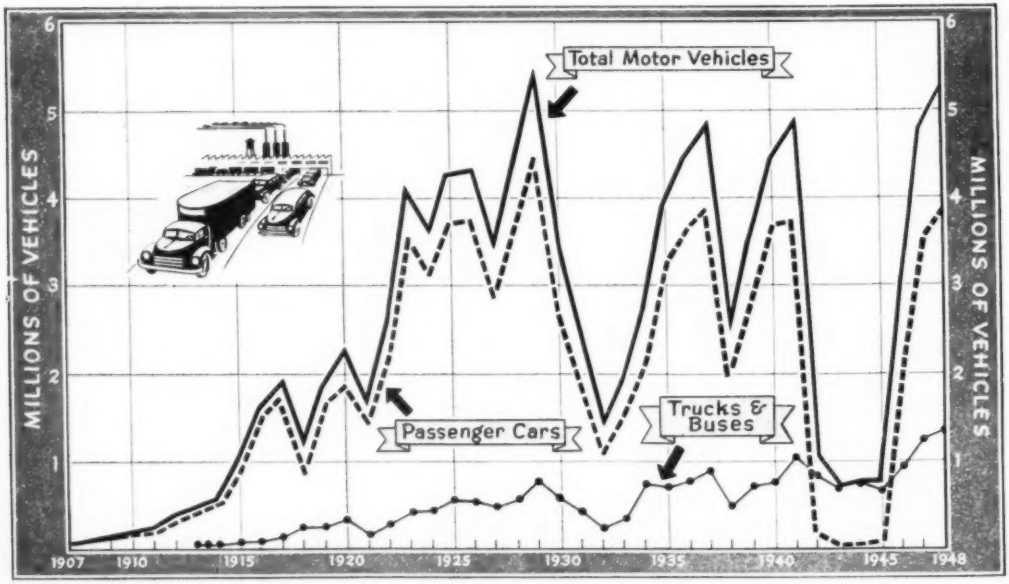
	1948	1947	1946	1941	1940	1939	1938	1937	1936	1935	1934
January	100,582	101,091	45,500	86,436	68,356	60,703	53,823	70,109	66,250	62,174	42,912
February	106,155	106,345	35,258	87,824	63,709	60,229	47,151	67,405	63,331	58,655	43,482
March	142,038	119,655	38,193	94,106	68,260	72,243	47,580	90,242	78,052	66,503	59,160
April	130,019	108,634	81,719	85,395	67,764	63,966	43,032	96,170	88,243	65,778	64,620
May	113,077	98,283	78,162	97,115	63,256	59,672	37,101	91,487	75,591	55,560	56,691
June	118,640	93,248	60,812	97,884	56,562	63,034	38,139	85,898	77,631	62,158	45,197
July	117,792	99,561	68,453	97,677	62,187	58,621	34,602	78,568	68,809	57,765	41,839
August	112,531	88,251	98,948	65,383	28,995	38,461	31,879	82,674	61,923	56,270	51,311
September	112,387	112,327	96,515	68,480	44,147	27,132	18,375	52,542	45,064	31,443	44,967
October	108,048	120,032	108,141	81,478	70,447	61,573	22,018	31,214	34,446	58,733	47,988
November	104,382	89,027	102,075	93,128	76,841	68,533	52,069	64,727	53,902	58,145	34,462
December	108,526	103,188	109,054	105,734	84,378	78,338	62,340	81,849	73,345	61,506	42,563
Total	1,376,155	1,239,642	940,830	1,060,820	754,901	710,496	488,100	893,085	784,587	694,690	575,192

TOTAL CARS, TRUCKS AND BUSES

	1948	1947	1946	1941	1940	1939	1938	1937	1936	1935	1934
January	486,663	347,696	101,867	499,448	431,476	342,168	209,328	379,603	363,942	289,728	155,666
February	383,002	373,360	93,052	484,891	403,304	303,220	186,531	364,193	287,542	332,231	230,256
March	492,034	421,180	124,003	510,122	424,611	371,946	221,645	494,121	420,922	425,913	338,434
April	438,090	423,399	214,350	464,301	431,860	337,375	219,110	536,150	502,674	452,936	352,975
May	338,538	382,640	243,104	518,746	391,128	297,542	192,059	516,919	460,512	361,107	330,455
June	431,046	400,372	201,902	520,892	345,790	309,738	174,670	497,312	452,968	356,340	306,477
July	474,556	379,192	297,633	445,784	236,405	209,359	141,443	438,968	440,731	332,109	264,933
August	461,353	349,409	346,209	144,726	76,799	99,868	90,494	394,330	271,274	237,400	234,811
September	413,537	420,269	328,795	234,857	267,740	188,757	83,534	171,213	135,165	87,540	170,007
October	491,803	436,001	391,727	378,032	492,224	313,392	209,512	329,876	224,688	272,043	131,991
November	468,622	394,175	371,156	352,759	485,658	351,785	372,413	360,055	394,987	395,059	83,482
December	486,981	470,127	375,719	285,944	485,291	452,142	388,346	326,234	498,710	404,528	153,624
Total	5,285,425	4,797,820	3,089,507	4,840,502	4,472,286	3,577,292	2,489,085	4,808,974	4,454,115	3,946,934	2,753,111

Source: Bureau of the Census and Automobile Manufacturers Association. No monthly factory sales are available for war years, 1942 to 1945.

PASSENGER CAR AND TRUCK PRODUCTION, 1907-1948



1948 Truck Factory Sales by Gross Vehicle Weights, by Months

From Plants Located in the United States

DOMESTIC MARKET

Month	5,000 lbs. & less	5,001 10,000	10,001 14,000	14,001 16,000	16,001 19,500	19,501 26,000	Over 26,000	Total
January	28,690	15,458	11,641	17,685	5,615	3,166	1,638	83,893
February	32,776	15,623	12,308	16,733	5,983	3,666	1,800	88,889
March	44,110	21,222	15,890	24,237	6,708	4,437	1,968	118,572
April	43,441	20,671	13,910	21,163	6,667	4,039	2,020	111,911
May	37,114	17,132	13,898	18,386	4,734	4,018	1,627	96,909
June	37,244	19,741	13,503	18,794	6,310	4,371	1,792	101,755
July	35,481	20,716	13,105	19,038	5,063	3,501	1,345	98,249
August	38,554	20,744	13,538	16,421	3,595	2,856	1,514	97,222
September	33,884	23,303	11,329	15,211	4,946	4,065	1,458	94,196
October	31,523	23,008	10,585	16,809	4,193	3,764	1,414	91,296
November	29,666	22,677	10,563	16,157	4,894	3,670	1,403	89,030
December	28,048	24,599	10,070	17,061	5,589	3,567	1,733	90,667
Total	420,531	244,894	150,340	217,695	64,297	45,120	19,712	1,162,589

FOREIGN MARKET

January	4,721	1,326	3,124	4,917	784	283	152	15,307
February	6,006	2,150	2,665	5,908	913	361	162	18,165
March	6,485	2,015	3,721	7,339	1,710	630	134	22,034
April	5,160	1,270	2,820	5,467	1,641	482	212	17,052
May	4,641	1,633	2,505	4,422	1,048	474	157	14,880
June	5,301	1,735	2,711	4,373	1,021	535	141	15,817
July	5,812	2,147	2,947	6,001	1,132	389	103	18,531
August	5,762	1,887	1,986	3,963	754	135	51	14,538
September	5,888	2,331	2,651	4,756	819	440	143	17,028
October	4,817	2,108	2,394	5,225	934	470	125	16,073
November	5,141	2,021	1,528	5,078	672	290	77	14,807
December	4,823	2,203	3,108	5,391	986	414	110	17,035
Total	64,557	22,826	32,160	62,840	12,414	4,903	1,567	201,267

TOTAL—DOMESTIC AND FOREIGN MARKETS

January	33,411	16,784	14,765	22,602	6,399	3,449	1,790	99,200
February	38,782	17,773	14,973	22,641	6,896	4,027	1,962	107,054
March	50,595	23,237	19,611	31,576	8,418	5,067	2,102	140,606
April	48,601	21,941	16,730	26,630	8,308	4,521	2,232	128,963
May	41,755	18,765	16,403	22,808	5,782	4,492	1,784	111,789
June	42,545	21,476	16,214	23,167	7,331	4,906	1,933	117,572
July	41,293	22,863	16,052	25,039	6,195	3,890	1,448	116,780
August	44,316	22,631	15,524	20,384	4,349	2,991	1,565	111,760
September	39,772	25,634	13,980	19,967	5,765	4,505	1,601	111,224
October	36,340	25,116	12,979	22,034	5,127	4,234	1,539	107,369
November	34,807	24,698	12,091	21,235	5,566	3,960	1,480	103,837
December	32,871	26,802	13,178	22,452	6,575	3,981	1,843	107,702
Total	485,088	267,720	182,500	280,535	76,711	50,023	21,279	1,363,856

Source: Automobile Manufacturers Association.

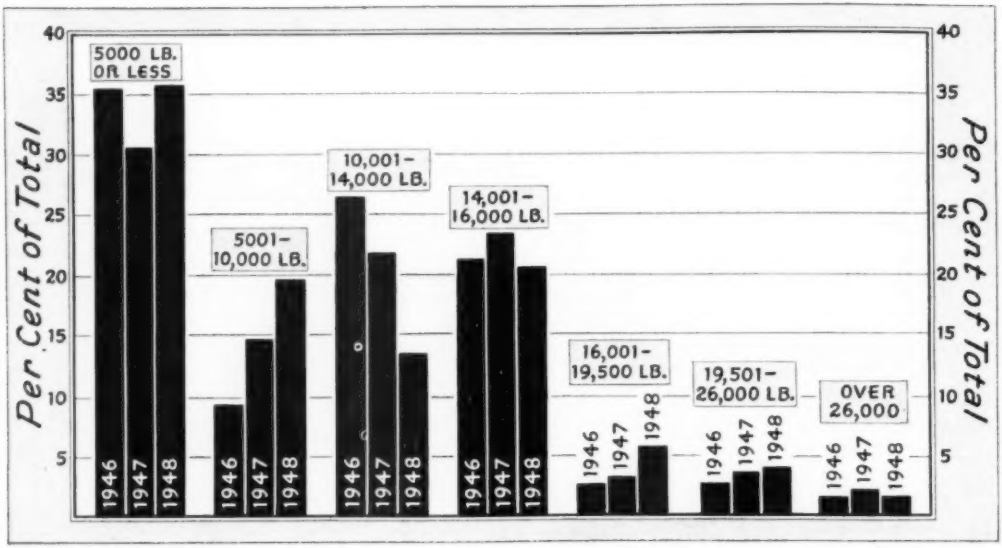
Prewar Truck Factory Sales by Ton Ratings

From Plants Located in the United States

Year	¾ ton or less	1 and less than 1½ tons	1½ and less than 2 tons	2 and less than 2½ tons	2½ and less than 3½ tons	3½ and less than 5 tons	5 tons and over	Special Types†	Total
1935	237,411	2,158	401,202	24,673	9,860	3,510	3,776	12,100	694,690
Per Cent	34.2	.3	57.8	3.6	1.4	.5	.5	1.7	100%
1936	301,861	9,404	409,438	26,442	11,788	4,573	5,537	15,544	784,587
Per Cent	38.4	1.2	52.2	3.4	1.5	.6	.7	2.0	100%
1937	373,844	20,101	423,801	17,683	18,147	6,057	9,222	24,228	893,085
Per Cent	41.9	2.3	47.4	2.0	2.0	.7	1.0	2.7	100%
1938	177,320	28,101	234,486	9,065	9,144	4,643	6,013	19,328	488,100
Per Cent	36.3	5.7	48.0	1.9	1.9	1.0	1.2	4.0	100%
1939	273,904	26,519	333,235	15,604	16,789	7,542	7,323	29,580	710,496
Per Cent	38.5	3.7	46.9	2.2	2.4	1.1	1.0	4.2	100%
1940‡	302,715	29,441	318,568	28,686	18,873	8,304	8,304	40,010	754,901
Per Cent	40.1	3.9	42.2	3.8	2.5	1.1	1.1	5.3	100%

‡ Partly estimated. † Includes station wagons, buses, fire apparatus, street sweepers and other special purpose vehicles, but excludes those vehicles converted into these types after having been shipped from the factory.

34% OF POSTWAR TRUCK SALES BELOW 5000 lbs. G.V.W.



Truck Factory Sales by Gross Vehicle Weights, by Years

From Plants Located in the United States

Year	5,000 lbs. and less	5,001–10,000	10,001–14,000	14,001–16,000	16,001–19,500	19,501–26,000	Over 26,000	Total
1946	330,730	88,235	247,912	200,574	24,162	25,252	13,874	930,739
Per Cent	35.53	9.48	26.64	21.55	2.60	2.71	1.49	100%
1947	375,445	182,490	265,989	285,589	41,606	42,761	26,754	1,220,634
Per Cent	30.76	14.95	21.79	23.40	3.41	3.50	2.19	100%
1948	485,088	267,720	182,500	280,535	76,711	50,023	21,279	1,363,856
Per Cent	35.57	19.63	13.38	20.57	5.62	3.67	1.56	100%
Average, 1946 1948	397,088	179,482	232,134	255,566	47,493	39,345	20,635	1,171,743
Per Cent	33.89	15.32	19.81	21.81	4.05	3.36	1.76	100%

Revenue Bus Production

From Plants Located in the United States

Month	1948	1947	1946	1944	1943	1942	1941	1940
January	1,382	1,273	447	231	227	901	438	467
February	1,101	1,303	285	245	226	828	456	454
March	1,430	1,421	527	336	102	929	662	495
April	1,056	1,650	948	352	76	875	603	338
May	1,288	1,653	789	367	33	938	701	531
June	1,068	1,628	774	293	54	875	609	458
July	1,012	1,806	882	381	15	879	690	406
August	771	1,765	1,067	470	48	263	627	688
September	1,143	1,607	833	863	145	557	748	403
October	679	1,867	975	594	162	376	615	685
November	545	1,416	1,146	484	199	419	573	591
December	824	1,721	1,430	1,483	326	497	982	721
Total	12,299	19,110	10,091	5,799	1,813	8,337	7,626	6,147

Source: Automobile Manufacturers Association.

110,300 Station Wagons Produced in 1948

Factory Sales of Special Type Vehicles from U. S. Plants

Type of Vehicle	1948 Total	1947 Domestic Market	1947 Export Market	1947 Total	1946 Domestic Market	1946 Export Market	1946 Total
Station Wagons	110,312	67,915	11,723	79,638	26,872	2,714	29,586
Motor Coaches	12,299	16,551	2,457	19,008	9,277	814	10,091
School Bus Chassis	23,755	20,241	10,190	30,431	24,340	10,061	34,401
Trucks with Cab-over-Engine	31,047	29,175	3,428	32,603	14,147	1,672	15,819
Trucks with Diesel Engines	5,698	2,605	3,604	6,209	1,961	2,383	4,344
Multi-Stop Trucks	21,284	15,317	559	15,876	10,120	129	10,249
Ambulances and Funeral Vehicles	.....	.....	.....	3,746	.....	.....	1,188

These vehicles have been included in factory sales figures shown on previous pages. Source: Automobile Manufacturers Association.

Foreign Markets Take 8.3% U. S. Production—1948

Factory Sales to Domestic and Foreign Markets

Year	PASSENGER CARS				TRUCKS AND BUSES*				TOTAL MOTOR VEHICLES			
	Total	Domestic Market	Foreign Market	% Foreign	Total	Domestic Market	Foreign Market	% Foreign	Total	Domestic Market	Foreign Market	% Foreign
1921	1,468,067	1,417,017	51,050	3.5	148,052	135,463	12,569	8.5	1,616,119	1,552,500	63,619	3.9
1922	2,274,185	2,169,185	105,000	4.6	269,991	247,593	22,398	8.3	2,544,176	2,416,778	127,398	5.0
1923	3,624,717	3,449,658	175,059	4.8	409,295	349,077	60,218	14.7	4,034,012	3,798,735	235,277	5.8
1924	3,185,881	2,968,711	217,170	6.8	416,695	340,555	76,104	18.3	3,602,540	3,309,266	293,274	8.1
1925	3,735,171	3,419,072	316,099	8.5	530,659	418,064	112,595	21.2	4,265,830	3,837,136	428,694	10.0
1926	3,783,967	3,494,791	289,196	7.6	516,947	413,080	103,867	20.1	4,300,934	3,907,871	393,063	9.1
1927	2,936,533	2,604,491	332,042	11.3	464,793	330,455	134,338	29.0	3,401,326	2,934,946	466,380	13.7
1928	3,815,417	3,396,516	418,901	11.0	543,342	379,530	163,812	30.1	4,358,759	3,776,046	582,713	13.4
1929	4,587,400	4,136,305	451,095	9.8	771,020	488,353	282,667	36.7	5,358,420	4,624,658	733,762	13.7
1930	2,784,745	2,536,981	247,764	8.9	571,241	413,290	157,951	10.1	3,355,986	2,950,271	405,715	12.1
1931	1,973,090	1,838,786	134,304	6.8	416,648	309,029	107,619	25.8	2,389,738	2,147,815	241,923	10.1
1932	1,135,491	1,062,376	73,115	6.4	235,187	187,837	47,350	20.1	1,370,678	1,250,213	120,465	8.8
1933	1,573,512	1,475,357	98,155	6.2	346,545	268,117	78,428	22.6	1,920,057	1,743,474	176,583	9.2
1934	2,177,919	1,993,763	184,156	8.4	575,192	448,826	126,366	22.0	2,753,111	2,442,589	310,522	11.3
1935	3,252,244	3,041,877	210,367	6.5	694,690	570,216	124,474	17.9	3,946,934	3,612,093	334,841	8.5
1936	3,689,528	3,458,051	211,477	5.8	784,567	649,997	134,590	17.2	4,454,115	4,108,048	346,067	7.8
1937	3,915,889	3,643,386	272,503	6.9	893,085	689,674	203,411	22.8	4,808,974	4,333,060	475,914	9.9
1938	2,000,965	1,810,938	190,047	9.5	488,100	352,207	135,893	27.8	2,489,065	2,163,145	325,940	13.1
1939	2,866,796	2,702,181	164,615	5.7	710,496	558,973	151,523	21.3	3,577,292	3,261,154	316,138	8.8
1940	3,717,385	3,608,042	109,343	2.9	682,791	599,912	92,879	13.4	4,410,176	4,207,954	202,222	4.6
1941	3,779,682	3,681,558	98,124	2.6	854,719	743,852	110,767	13.9	4,634,401	4,425,490	208,911	4.7
1942	222,862	215,779	7,083	3.2	184,985	164,325	20,660	11.2	407,847	380,104	27,743	6.8
1943	139	121	18	12.9	24,842	23,420	1,422	5.7	24,981	23,541	1,440	5.8
1944	610	308	302	49.5	116,167	102,295	13,872	11.9	116,777	102,603	14,174	12.1
1945	69,532	68,093	1,439	2.1	291,469	254,039	37,430	12.8	361,001	322,132	38,869	10.7
1946	2,148,699	2,004,649	144,050	6.7	940,851	753,630	187,021	19.9	3,089,550	2,758,479	331,071	10.7
1947	3,558,178	3,297,331	260,847	7.3	1,239,744	988,255	251,489	20.3	4,797,922	4,285,589	512,333	10.7
1948	3,909,270	3,676,093	233,177	6.0	1,376,155	1,173,115	203,040	14.7	5,285,425	4,849,208	436,217	8.3

*—Military trucks excluded 1940 through 1945.
Source:—Department of Commerce through 1939. Automobile Manufacturers Association for subsequent years.

TRUCK TRAILERS

Truck Trailer Production*

Type of Trailer	1948	1947	1946
Vans:			
Insulated and Refrigerated	2,277	1,852	3,384
Furniture	546	1,185	2,648
All Other Closed Top	18,366	18,601	26,590
Open Top	2,002	1,616	2,029
Total—Vans	23,191	23,254	34,651
Platforms:			
With Cattle and Stake Racks	1,590	3,369	8,183
With Grain Bodies	586	1,271	(1)
All Other	5,330	7,915	11,762
Total—Platform	7,506	12,555	19,945
Tanks:			
Petroleum	3,176	3,019	2,231
All Other	374	411	395
Total—Tanks	3,550	3,430	2,626
Pole and Logging:			
Single Axle	2,059	3,815	5,970
Tandem Axle	1,605	1,541	1,598
Total	3,664	5,356	7,568
Low-bed Heavy Haulers	1,825	2,405	1,976
Off-Highway	669	808	619
Dump Trailers	2,469	622	697
All Other Trailers		1,365	2,537
Total—Trailers	42,874	49,795	70,619
Trailer Chassis	1,952	3,301	5,615
Total—Trailers and Chassis	44,826	53,096	76,234

*—Industry Division, Bureau of the Census. (1)—Included with "All Other."

Truck Trailer Shipments*

In Units and Their Value

1948	Shipments	Value
January	3,303	$9,216,540
February	3,764	11,258,867
March	4,573	13,339,449
April	4,736	13,313,997
May	3,985	11,544,799
June	4,113	12,108,978
July	3,773	11,037,752
August	4,196	12,751,751
September	3,746	11,306,032
October	3,853	11,982,830
November	3,435	11,099,243
December	3,451	11,013,385
Total	46,928	$139,973,623

1947	Shipments	Value
January	5,781	$12,253,522
February	5,988	13,652,252
March	6,744	15,861,787
April	5,123	12,691,288
May	4,568	11,270,344
June	3,813	9,919,483
July	3,260	8,627,335
August	3,665	10,120,415
September	3,948	10,469,130
October	4,605	11,952,284
November	3,969	10,642,563
December	3,908	10,922,690
Total	55,372	$138,383,093

FARM and NON-FARM TRACTOR SHIPMENTS

Tractor Factory Sales*

In Units and Their Wholesale Value

WHEEL TYPE

Year	Number	Value at Factory	Average Value per Tractor
1947	420,004	$342,568,286	$815
1946	255,338	192,272,124	753
1945	243,692	168,895,732	693
1944	249,955	170,112,908	680
1943	103,867	63,216,811	609
1942	185,677	111,618,126	601
1941	324,062	191,128,659	590
1940	249,921	137,178,844	549
1939	185,321	111,178,377	600
1938	175,473	118,060,604	673

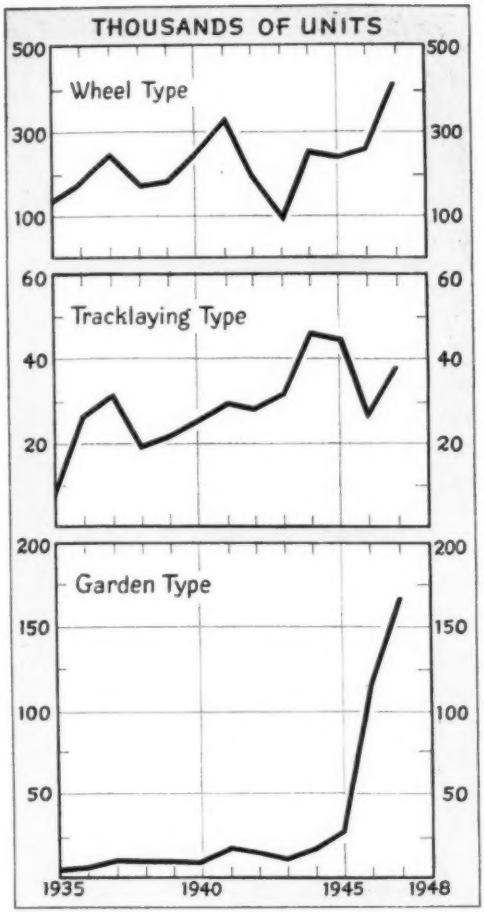
TRACKLAYING TYPE

1947	37,607	$134,215,243	$3,568
1946	26,265	82,993,679	3,160
1945	43,998	212,007,480	4,818
1944	45,187	260,582,975	5,766
1943	30,652	142,194,327	4,639
1942	28,644	100,369,913	3,504
1941	29,744	80,063,902	2,692
1940	25,110	60,285,160	2,400
1939	21,104	45,803,981	2,170
1938	19,801	40,221,557	2,031

GARDEN TYPE

1947	168,009	$33,012,040	$196
1946	115,241	23,925,724	208
1945	27,962	3,592,299	128
1944	16,852	2,288,853	136
1943	9,610	1,411,196	147
1942	12,983	1,862,171	143
1941	16,896	2,197,382	130
1940	9,399	1,312,264	140
1939	9,599	1,423,818	148
1938	9,633	1,332,014	138

* Industry Division, Bureau of the Census.



Tractor Factory Sales by Hp Ratings

In Units and Their Value

	1947		1946		1945	
	Number	Value	Number	Value	Number	Value
Wheel Type						
All Purpose						
Under 25 Belt Hp.	270,584	$188,155,062	170,858	$110,669,956	139,719	$ 78,866,329
25-34 Belt Hp.	84,233	80,040,791	41,589	38,434,451	(1)	(1)
35 Belt Hp. and over	5,911	8,659,882	5,740	6,768,236	56,643	48,311,279
Other						
Under 25 Belt Hp.	16,466	12,210,675	16,293	11,215,620	17,861	11,196,645
25-34 Belt Hp.	15,692	15,219,604	8,080	7,497,156	11,792	9,671,469
34 Belt Hp. and over	27,138	38,282,272	12,778	17,686,705	17,677	20,850,010
Total—Wheel Type	420,004	$342,568,286	255,338	$192,272,124	243,692	$168,895,732
Tracklaying Type						
Under 35 Drawbar Hp.	12,084	$ 20,492,971	8,197	$ 12,448,885	7,214	$ 8,666,660
35-49 Drawbar Hp.	9,597	27,912,164	6,918	17,204,727	11,125	25,834,729
50-69 Drawbar Hp.	7,214	29,923,535	4,703	17,404,146	7,871	27,756,136
70 Drawbar Hp. and over	8,712	55,886,573	6,447	35,875,921	17,788	149,749,955
Total—Tracklaying Type	37,607	$134,215,243	26,265	$ 82,933,679	43,998	$212,007,480
Total—Wheel and Tracklaying Types	457,611	$476,783,529	281,603	$275,205,803	287,690	$380,903,212

(1) Included with 35 belt Hp and over. Source: Industry Division, Bureau of the Census.

Motor Vehicle Production in Canada*

In Units and Their Value

Year	PASSENGER CARS			TRUCKS AND BUSES			TOTAL	
	Number of Units†	Wholesale Value	Average Wholesale Value	Number of Units†	Wholesale Value	Average Wholesale Value	Number of Units	Wholesale Value
1925	135,573	$86,158,773	$635	26,397	$12,234,486	$463	161,970	$98,393,259
1926	166,887	106,000,203	635	37,840	16,629,334	439	204,727	122,629,537
1927	146,421	100,962,211	689	32,633	14,942,017	458	179,054	115,904,228
1928	197,848	127,263,877	643	44,206	21,913,122	496	242,054	149,176,999
1929	203,307	134,023,280	659	59,318	29,474,395	497	262,625	163,497,675
1930	121,337	75,253,581	620	32,035	16,513,225	515	153,372	91,766,806
1931	65,072	42,634,173	655	17,487	10,330,763	591	82,559	52,964,936
1932	50,694	32,490,129	641	10,095	6,070,667	601	60,789	38,560,796
1933	53,849	32,568,268	605	12,003	6,062,195	505	65,852	38,630,463
1934	92,647	57,260,156	618	24,205	12,770,318	528	116,852	70,030,474
1935	135,562	79,209,276	584	37,315	19,803,771	531	172,877	99,013,047
1936	128,369	76,814,258	598	33,790	19,140,946	566	162,159	95,955,204
1937	153,046	93,368,282	610	54,417	30,389,011	558	207,463	123,757,293
1938	123,761	81,661,687	660	42,325	26,497,038	626	166,086	108,158,725
1939	108,369	71,101,204	656	47,057	28,072,712	597	155,426	99,173,916
1940	109,911	83,544,445	760	113,102	91,191,516	806	223,013	174,735,961
1941	96,603	81,167,694	840	173,588	163,414,253	941	270,191	244,581,947
1942	12,236	10,305,013	842	216,057	229,103,128	1,060	228,293	239,408,741
1943				178,064	222,393,092	1,249	178,064	222,393,092
1944				158,038	213,259,582	1,349	158,038	213,259,582
1945	1,868	1,638,118	877	130,777	167,103,012	1,278	132,645	168,741,130
1946	91,871	82,847,330	902	79,657	81,204,338	1,019	171,528	164,051,668
1947	167,257	182,161,183	1,089	90,758	116,357,486	1,282	258,015	298,518,669
1948	166,820			97,078			263,898	

† Production figures include all wheeled vehicles for military use. Universal carriers and scout cars are not included.
* Canadian Automobile Chamber of Commerce.

Canadian Motor Vehicle Production—by Months*

	1948	1947	1946	1945	1944	1943	1942	1941
January	16,673	18,700	8,495	13,745	13,072	16,341	22,644	23,195
February	16,469	20,331	7,484	13,090	13,930	15,998	20,181	23,648
March	27,120	22,491	11,373	14,912	14,625	17,687	20,188	25,945
April	24,233	21,891	16,830	14,351	11,061	15,500	19,549	27,515
May	21,458	21,665	20,022	15,045	12,303	15,689	17,141	26,554
June	23,355	21,137	15,585	14,532	14,317	15,164	21,050	25,753
July	15,180	21,907	17,221	11,093	12,132	11,598	18,672	24,654
August	16,833	15,659	12,293	13,376	13,729	15,046	18,042	17,192
September	23,644	24,205	11,543	8,484	12,511	13,122	18,094	14,495
October	25,011	25,479	14,951	6,596	13,230	13,827	19,477	19,358
November	26,666	23,240	19,105	1,575	14,047	14,186	15,051	21,545
December	27,256	21,310	16,626	5,846	12,451	13,906	18,204	20,337
Total	263,898	258,015	171,528	132,645	158,038	178,064	228,293	270,191

* Canadian Automobile Chamber of Commerce.

1947 Canadian Motor Vehicle Registrations—by Provinces*

Province	Passenger Cars	Motor Trucks	Motor Buses	Other Motor Vehicles‡	Total Motor Vehicles	Motor-cycles	Trailers
P. E. Island	7,559	2,137	33	182	9,911	37	506
Nova Scotia	47,109	20,302	400	1,685	69,496	804	2,239
New Brunswick	34,611	13,727	313	2,207	50,858	731	2,697
Quebec	211,204	70,541	2,266	8,298	292,309	6,379	16,327
Ontario	645,252	139,284	2,940		787,476	9,471	65,714
Manitoba	80,201	29,473	185	1,172	111,031	1,118	9,185
Saskatchewan	105,329	51,993	111	79	157,512	1,000	8,967
Alberta	105,132	47,012	347	1,361	153,852	1,534	425
British Columbia	128,611	46,434	†	275	175,320	4,364	9,487
Yukon & N. W. T.	1,047	659	3	67	1,776	10	4
Total—Canada	1,366,055	421,562	6,598	15,326	1,809,541	25,448	115,551

† Included with trucks.
‡ Includes road tractors, ambulances, fire trucks, hearses, government and municipal motor vehicles.
* Canadian Automobile Chamber of Commerce.

New registrations

CARS AND TRUCKS

New Passenger Car Registrations by Makes, by Years*

Make of Car	1948 Units	1948 % of Total	1947 Units	1947 % of Total	1946 Units	1946 % of Total	1941 Units	1941 % of Total
Chrysler	105,315	3.02	93,871	2.96	65,532	3.61	143,025	3.83
De Soto	82,454	2.36	72,966	2.30	54,420	2.99	91,004	2.44
Dodge	213,923	6.13	209,552	6.62	135,488	7.46	215,563	5.78
Plymouth	347,174	9.94	313,118	9.89	211,800	11.68	452,187	12.12
Total—Chrysler Corp.	748,866	21.45	689,507	21.77	467,240	25.74	901,779	24.17
Ford	486,888	13.95	532,646	16.82	326,822	18.01	602,013	16.13
Lincoln	32,638	.93	24,081	.76	10,798	.59	18,769	.51
Mercury	137,512	3.94	111,198	3.51	61,187	3.37	81,874	2.19
Total—Ford Motor Co.	657,038	18.82	667,925	21.09	398,807	21.97	702,656	18.83
Buick	244,762	7.01	246,115	7.77	126,322	6.96	308,615	8.27
Cadillac	59,379	1.70	53,379	1.69	23,666	1.30	60,242	1.71
Chevrolet	709,609	20.33	640,709	20.23	329,601	18.16	880,346	23.59
Oldsmobile	175,531	5.03	180,078	5.68	93,094	5.13	230,367	6.17
Pontiac	228,939	6.56	206,411	6.52	113,109	6.23	286,123	7.68
Total—Genaral Motors Corp.	1,418,220	40.63	1,326,692	41.89	685,792	37.78	1,765,693	47.32
Frazer	57,994	1.66	51,158	1.62	1,873	.10		
Kaiser	108,367	3.10	55,571	1.75	3,501	.19		
Total—Kaiser-Frazer Corp.	166,361	4.76	106,729	3.37	5,374	.29		
Crosley	25,400	.73	15,934	.50	2,868	.16	1,146	.03
Hudson	109,497	3.14	83,344	2.63	72,484	3.99	73,261	1.96
Nash	104,156	2.98	102,808	3.25	85,169	4.69	77,824	2.09
Packard	77,843	2.23	47,875	1.51	36,435	2.01	69,653	1.87
Studebaker	143,120	4.10	102,123	3.22	58,051	3.20	114,331	3.06
Willys	21,408	.61	23,400	.74	2,329	.13	22,102	.59
All Others	‡19,043	.55	894	.03	647	.04	2,721	.08
Total—Independents	666,828	19.10	483,107	15.25	263,357	14.51	361,038	9.68
Total—All Makes	3,490,952	100.00	3,167,231	100.00	1,815,196	100.00	3,731,166	100.00

* Data from R. L. Polk & Co. ‡ 1948 includes 8610 British Austins and 3223 British Fords.

New Truck Registrations by Makes, by Years*

Make of Truck	1948 Units	1948 % of Total	1947 Units	1947 % of Total	1946 Units	1946 % of Total	1941 Units	1941 % of Total
Autocar	2,770	.27	4,334	.49	4,755	.76	2,510	.39
Brockway	2,958	.29	4,255	.48	3,683	.59	2,294	.36
Chevrolet	302,219	29.19	235,803	26.82	171,618	27.44	212,797	33.22
Crosley	2,411	.23						
Diamond T	10,657	1.03	10,475	1.19	5,093	.81	6,077	.95
Divco	5,618	.54	4,893	.56	3,734	.60	2,306	.36
Dodge	114,431	11.05	126,736	14.42	96,490	15.43	62,925	9.82
Federal	4,026	.39	6,020	.68	4,557	.73	1,611	.25
Ford	225,729	21.81	186,414	21.20	131,469	21.03	174,024	27.16
F.W.D.	811	.08	1,195	.14	585	.09	280	.04
G.M.C.	74,857	7.23	49,187	5.59	25,645	4.10	45,703	7.13
Hudson	117	.01	2,534	.29	2,543	.41	736	.11
International	125,203	12.09	113,151	12.87	78,392	12.54	92,482	14.43
Kenworth	478	.05	487	.06				
Mack	9,795	.95	10,917	1.24	4,687	.75	9,468	1.48
Nash	32							
Oshkosh	173	.02	245	.03				
Reo	10,773	1.04	12,911	1.47	10,489	1.68	1,543	.24
Sterling	411	.04	576	.07	510	.08	400	.06
Studebaker	50,657	4.89	41,861	4.76	25,360	4.06	5,078	.79
Ward La France	271	.03	509	.06				
White	11,603	1.12	13,086	1.49	10,117	1.62	9,271	1.45
Willys—Jeep	48,644	4.70	47,612	5.42	42,135	6.74		
Willys—Truck	27,840	2.69	2,207	.25			2,031	.32
All Others	2,690	.26	3,724	.42	3,387	.54	†9,161	1.44
Total	1,035,174	100.00	879,132	100.00	625,249	100.00	640,697	100.00

* Data from R. L. Polk & Co. † Includes 7732 Plymouth trucks.

New Car Registrations, by Months, 1941, 1947-1948

	1948		1947		1941	
	Units	% of Total	Units	% of Total	Units	% of Total
January	274,978	7.88	209,063	6.60	297,558	7.97
February	249,781	7.16	214,333	6.77	299,701	8.03
March	311,650	8.93	264,714	8.36	419,396	11.24
April	330,555	9.47	290,226	9.16	488,480	13.09
May	255,638	7.32	286,719	9.05	514,478	13.79
June	246,926	7.07	269,863	8.52	443,470	11.89
July	291,206	8.34	263,167	8.31	391,795	10.50
August	317,788	9.10	264,866	8.36	246,595	6.61
September	296,339	8.49	251,655	7.95	125,293	3.36
October	291,442	8.35	281,428	8.89	165,485	4.43
November	313,230	8.97	258,934	8.17	164,747	4.42
December	311,419	8.92	312,263	9.86	174,188	4.67
Total	3,490,952	100.00	3,167,231	100.00	3,731,166	100.00

New Car and Truck Registrations—by Years*

Year	New Passenger Cars	New Commercial Vehicles	Total New Cars and Trucks	Year	New Passenger Cars	New Commercial Vehicles	Total New Cars and Trucks
1927	2,623,538	327,965	2,951,503	1938	1,891,021	365,349	2,256,370
1928	3,139,579	341,123	3,480,702	1939	2,653,377	486,748	3,140,125
1929	3,880,206	527,057	4,407,263	1940	3,415,905	559,150	3,975,055
1930	2,625,979	410,699	3,036,678	1941	3,731,166	640,697	4,371,863
1931	1,908,141	313,884	2,222,025	1942	304,691	77,422	382,113
1932	1,096,399	180,413	1,276,812	1943	205,805	62,469	268,274
1933	1,493,794	245,869	1,739,663	1944	65,730	121,269	186,999
1934	1,888,557	403,886	2,292,443	1945	71,877	350,932	422,809
1935	2,743,908	510,683	3,254,591	1946	1,815,196	625,249	2,440,445
1936	3,404,497	611,644	4,016,141	1947	3,167,231	879,132	4,046,363
1937	3,483,752	618,249	4,102,001	1948	3,490,952	1,035,174	4,526,126

* Sources: 1926 through February, 1942 and 1946 and later years compiled by R. L. Polk & Co. Passenger car data from March, 1942 through July, 1945 are from OPA and represent new car releases to civilian users. Commercial car data from April, 1942 through July, 1945 are from WPB and ODT and represent certificates of transfer issued to civilian users, excluding government exemption permits.

New Motor Vehicle Registrations, by States*

STATE	NEW PASSENGER CARS 1948	1947	1946	NEW TRUCKS 1948	1947	1946	TOTAL NEW VEHICLES 1948	1947	1946
Alabama	40,432	35,508	21,850	22,309	17,615	15,705	62,741	53,123	37,555
Arizona	12,994	10,655	5,711	6,042	4,611	3,424	19,036	15,466	9,135
Arkansas	21,319	19,786	10,817	18,289	14,563	10,598	39,608	34,349	21,415
California	272,209	253,341	138,419	64,009	58,653	41,437	336,218	311,994	177,856
Colorado	27,942	25,958	13,346	12,285	9,490	5,412	40,227	35,448	18,758
Connecticut	50,745	48,782	27,797	9,903	8,665	6,089	60,648	57,447	33,886
Delaware	9,996	8,846	5,243	3,238	2,733	1,746	13,234	11,579	6,989
Dist. of Col.	25,270	23,186	14,048	3,987	3,299	2,180	29,257	26,485	16,228
Florida	53,746	49,009	26,680	19,557	18,383	13,412	73,303	67,392	40,092
Georgia	59,703	53,432	25,102	28,207	20,499	13,446	87,910	73,931	38,548
Idaho	14,554	12,093	6,106	8,258	6,110	3,643	22,812	18,203	9,749
Illinois	241,231	218,536	122,081	52,646	45,457	31,393	293,877	263,993	153,474
Indiana	101,128	97,223	55,679	27,196	25,755	16,534	128,324	122,978	72,213
Iowa	68,947	54,637	33,008	26,358	20,835	14,058	95,305	75,472	47,066
Kansas	48,970	40,864	23,635	22,246	16,957	12,154	71,216	57,821	35,789
Kentucky	43,082	38,144	23,291	22,170	17,193	11,729	65,252	55,337	35,020
Louisiana	44,925	35,525	19,747	16,061	12,653	9,143	60,986	48,178	28,890
Maine	17,298	15,690	8,473	7,497	7,683	4,773	24,795	23,373	13,246
Maryland	52,762	48,034	26,309	13,267	12,412	8,554	66,029	60,446	34,863
Massachusetts	102,244	97,447	63,188	17,878	17,695	14,915	120,122	115,142	78,103
Michigan	250,853	246,973	141,115	39,568	33,553	24,203	290,421	280,526	165,318
Minnesota	76,781	60,567	37,325	23,996	17,108	13,453	100,777	77,675	50,778
Mississippi	28,242	26,382	13,783	18,093	15,264	12,297	46,335	41,646	26,080
Missouri	93,286	84,905	49,606	31,611	27,631	21,826	124,877	112,536	71,432
Montana	18,014	15,300	7,015	10,453	8,243	4,414	28,467	23,543	11,429
Nebraska	35,234	28,654	16,786	16,664	12,082	8,283	51,898	40,736	25,069
Nevada	5,028	4,597	2,105	1,654	1,373	1,136	6,682	5,970	3,241
New Hampshire	10,539	10,790	5,099	3,838	3,749	1,838	14,377	14,539	6,937
New Jersey	116,945	106,585	63,784	25,219	22,604	17,666	142,164	129,189	81,450
New Mexico	10,897	8,969	4,685	6,082	4,952	3,113	16,979	13,921	7,798
New York	338,254	308,710	183,070	62,446	56,259	43,836	400,700	364,969	226,906
North Carolina	59,584	54,756	30,648	28,054	24,445	15,196	87,638	79,201	45,844
North Dakota	13,359	11,894	6,046	8,283	6,151	3,823	21,642	18,045	9,869
Ohio	220,248	215,359	124,689	47,755	45,336	32,581	268,003	260,695	157,270
Oklahoma	44,942	39,119	24,510	22,544	18,392	13,346	67,486	57,511	37,856
Oregon	39,655	34,121	17,520	15,560	12,184	7,465	55,215	46,305	24,985
Pennsylvania	257,784	228,733	137,696	60,271	52,586	38,014	318,035	281,319	175,709
Rhode Island	19,816	18,261	10,052	4,600	3,495	2,606	24,416	21,756	12,658
South Carolina	30,599	28,705	16,635	12,536	11,194	8,405	43,135	39,899	25,040
South Dakota	14,338	10,806	6,281	7,872	5,549	3,456	22,210	16,357	9,737
Tennessee	60,141	59,732	30,689	26,756	23,206	15,603	86,897	82,938	46,292
Texas	168,379	139,780	88,069	67,737	55,182	41,275	236,116	194,962	129,344
Utah	13,874	12,278	6,280	5,968	4,612	2,680	19,842	16,890	8,960
Vermont	8,991	8,164	4,167	4,294	3,946	2,482	13,285	12,110	6,649
Virginia	73,515	67,435	31,573	23,530	22,555	14,224	97,045	89,990	45,797
Washington	54,109	47,711	25,565	18,054	13,780	9,148	72,163	61,491	34,713
West Virginia	25,098	22,882	13,432	12,082	9,019	6,639	37,180	31,901	20,071
Wisconsin	84,224	71,116	44,608	23,398	19,729	13,610	107,622	90,845	58,218
Wyoming	8,766	7,049	3,834	4,853	3,492	2,286	13,619	10,541	6,120
Total	3,490,952	3,167,231	1,815,196	1,035,174	879,132	625,249	4,526,126	4,046,363	2,440,445

*— Data from R. L. Polk & Co.

73% of 1948 New Truck Sales Under 14000 G.V.W.

New Truck Registrations by Makes, by G.V.W.—1948 and 1947

		5,000 lb. or less	5,001-10,000	10,001-14,000	14,001-16,000	16,001-19,500	19,501-26,000	26,001 lb. and over	Total
AUTOCAR	1948							2,770	2,770
	1947							4,334	4,334
BROCKWAY	1948				370	239	1,606	743	2,958
	1947				574	120	2,437	1,124	4,255
CHEVROLET	1948	124,669	72,143	32,651	72,756				302,219
	1947	87,648	40,252	25,888	82,015				235,803
CROSLEY	1948	2,411							2,411
	1947								
DIAMOND T	1948		1,115	3,779	3,530	1,126	704	403	10,657
	1947		945	2,643	4,704	1,271	390	522	10,475
DIVCO	1948		4,678	940					5,618
	1947		3,636	1,257					4,893
DODGE	1948	42,097	28,710	978	29,777	11,377	1,492		114,431
	1947	36,719	32,138	35,407	17,772	3,014	1,686		126,736
FEDERAL	1948			625	1,981	396	821	203	4,026
	1947			1,068	3,143	213	997	599	6,020
FORD	1948	79,616	50,287	51,140	31,047	10,717	2,922		225,729
	1947	46,365	33,533	85,057	21,459				186,414
F. W. D.	1948					64	609	138	811
	1947					140	699	356	1,195
G. M. C.	1948	20,962	14,316	15,339	9,522	8,507	3,175	3,036	74,857
	1947	13,511	8,016	16,693	3,883	3,577	1,743	1,764	49,187
HUDSON	1948	117							117
	1947	2,534							2,534
INTERNATIONAL	1948	25,000	29,306	30,749	13,078	13,474	10,207	3,389	125,203
	1947	20,925	27,044	32,301	12,484	11,005	5,918	3,474	113,151
KENWORTH	1948							478	478
	1947							487	487
MACK	1948				960	1,274	4,202	3,359	9,795
	1947			1	1,373	1,671	5,215	2,657	10,917
OSHKOSH	1948							173	173
	1947						17	228	245
REO	1948			3,953	4,684	1,404	246	486	10,773
	1947			7,017	1,777	2,280	1,065	772	12,911
STERLING	1948						14	397	411
	1947						46	530	576
STUDEBAKER	1948	18,651	10,979	16,638	4,389				50,657
	1947	20,271	6,271	12,366	2,953				41,861
WARD LA FRANCE	1948						22	249	271
	1947						56	453	509
WHITE	1948				1,005	423	8,701	1,474	11,603
	1947			899	399	1,828	8,534	1,426	13,086
WILLYS	1948	65,410	11,074						76,484
	1947	48,427	1,392						49,819
ALL OTHERS	1948	741	457	162	3	263	386	710	2,722
	1947	1,851	416	204	13	210	273	757	3,724
TOTAL	1948	379,674	223,065	156,954	173,102	49,264	35,107	18,008	1,035,174
	1947	278,251	153,643	220,801	152,549	25,329	29,076	19,483	879,132
	1946	243,806	61,092	183,774	87,577	12,759	19,409	16,832	625,249
PER CENT OF TOTAL	1948	36.68%	21.55%	15.16%	16.72%	4.76%	3.39%	1.74%	100%
	1947	31.65%	17.48%	25.12%	17.35%	2.88%	3.30%	2.22%	100%
	1946	38.99%	9.77%	29.39%	14.01%	2.04%	3.10%	2.70%	100%

Source of data: R. L. Polk & Co.

Automotive Wholesalers, Dealers and Repair Shops—by Years*

(As of January of Each Year)

	Wholesalers	Passenger Car Dealers	Total Truck Dealers	Car and Truck Dealers	Independent Repair Shops	All Retail Outlets‡
1928	3,796		23,869		37,615	105,338
1929	3,912	50,984	24,068		43,863	111,329
1930	4,028	51,560	25,436		47,882	117,493
1931	4,668	47,144	26,137	48,658	53,898	118,713
1932	5,051	42,881	25,952	43,708	58,045	108,147
1933	5,337	38,003	23,746	39,370	59,547	103,113
1934	5,430	34,069		35,265	65,064	102,456
1935	5,757	35,977		37,238	64,518	105,991
1936	5,905	39,769	23,045	41,201	60,574	105,579
1937	5,874	41,288	24,853	43,461	56,423	102,808
1938	5,934	43,747	27,248	46,224	51,709	101,053
1939	6,019	39,936	26,909	41,992	50,406	95,418
1940	6,176	39,258	24,575	41,870	49,091	93,764
1941	6,575	39,833	24,992	41,790	49,208	95,296
1942	6,631	38,748	32,291	40,537	47,552	93,022
1943	6,130	32,470	27,820	34,270	43,540	80,863
1944	6,101	31,200		33,000	42,166	78,550
1945	6,217	30,110	26,370	31,930	41,193	78,498
1946	6,612	30,709	27,159	32,439	42,702	81,638
1947	7,328	34,424	29,397	36,354	49,485	91,229
1948	7,982	38,480	25,998†	40,410	55,694	104,504
1949	8,338	40,022	27,574	43,004	59,908	109,499

* Trade List Department Chilton Company. † Reduction in truck dealers caused by discontinuance of Plymouth truck production.
‡ Includes Car and Truck Dealers, Independent Repair Shops, Super Service Stations and Wrecking and Body Establishments, duplications eliminated.

Automotive Wholesalers, Dealers and Repair Shops†

With Number of Motor Vehicles per Outlet

STATE	Total Motor Vehicle Registrations	WHOLESALERS: Number of Wholesalers	WHOLESALERS: Motor Vehicles per Wholesaler	DEALERS: Passenger Car Dealers	DEALERS: Truck Dealers	DEALERS: Car and Truck Dealers	DEALERS: Motor Vehicles per Car and Truck Dealer	REPAIR SHOPS: Independent Repair Shops	REPAIR SHOPS: Motor Vehicles per Repair Shop	RETAIL OUTLETS*: All Retail Outlets	RETAIL OUTLETS*: Motor Vehicles per Outlet
Alabama	495,458	132	3,753	464	361	494	1,001	389	1,274	940	527
Arizona	210,896	64	3,295	200	157	215	981	332	635	578	365
Arkansas	382,449	127	3,011	492	381	547	699	557	687	1,126	340
California	3,585,000	707	5,071	2,060	1,381	2,220	1,565	6,168	563	9,083	393
Colorado	467,311	100	4,673	497	364	513	911	710	658	1,327	352
Connecticut	586,668	113	5,192	509	323	562	1,044	754	778	1,485	400
Delaware	83,367	18	4,632	87	65	90	926	128	651	241	346
District of Columbia	162,025	24	6,751	68	38	71	2,282	183	1,059	236	687
Florida	783,868	158	4,961	548	412	614	1,277	699	1,121	1,395	562
Georgia	713,383	167	4,272	634	495	706	1,010	403	1,770	1,141	625
Idaho	216,508	69	3,138	339	270	392	552	403	537	844	257
Illinois	2,215,670	455	4,870	2,270	1,505	2,495	888	3,202	692	6,320	351
Indiana	1,205,500	228	5,287	1,231	853	1,336	902	1,805	668	3,128	385
Iowa	883,531	215	4,109	1,264	960	1,379	641	1,259	702	2,879	307
Kansas	756,165	157	4,816	910	651	972	778	865	874	1,847	409
Kentucky	607,213	141	4,306	678	466	720	843	491	1,237	1,293	470
Louisiana	519,801	108	4,813	408	328	471	1,104	441	1,179	970	536
Maine	245,805	55	4,469	391	282	413	595	605	406	1,007	244
Maryland	565,229	99	5,709	406	194	451	1,253	477	1,185	988	572
Massachusetts	1,101,285	221	4,983	1,128	673	1,173	939	1,439	765	2,832	390
Michigan	2,004,712	333	6,020	1,613	1,174	1,857	1,080	3,014	665	5,211	385
Minnesota	946,697	161	5,880	1,417	1,072	1,556	608	1,712	553	3,543	267
Mississippi	362,488	102	3,554	487	362	519	698	226	1,604	757	479
Missouri	1,077,000	262	4,111	1,131	785	1,200	897	1,398	770	2,795	385
Montana	215,793	62	3,481	420	325	445	485	331	652	821	263
Nebraska	505,156	117	4,318	711	519	751	673	824	613	1,690	299
Nevada	60,990	15	4,066	98	68	104	586	123	496	249	245
New Hampshire	149,124	27	5,523	240	164	246	606	304	491	557	268
New Jersey	1,315,296	226	5,820	982	598	1,048	1,255	2,349	560	3,539	372
New Mexico	168,140	64	2,627	233	167	247	681	352	478	639	263
New York	3,094,555	550	5,626	2,621	1,649	2,772	1,116	6,089	508	9,507	326
North Carolina	826,334	198	4,173	854	596	880	939	836	988	1,823	453
North Dakota	238,944	54	4,425	445	348	524	456	441	542	951	251
Ohio	2,340,600	452	5,178	2,016	1,273	2,145	1,091	2,578	908	5,034	465
Oklahoma	678,921	180	3,772	803	581	867	783	1,045	650	2,071	328
Oregon	565,689	133	4,253	505	355	544	1,040	1,278	443	1,937	292
Pennsylvania	2,701,255	527	5,126	2,956	1,842	3,116	867	5,430	497	9,064	298
Rhode Island	219,267	36	6,091	147	81	154	1,423	300	731	505	434
South Carolina	452,032	92	4,913	421	298	441	1,025	355	1,273	762	593
South Dakota	246,330	40	6,158	377	299	398	619	334	738	786	313
Tennessee	647,823	149	4,348	562	408	595	1,089	543	1,193	1,178	550
Texas	2,282,000	509	4,483	2,295	1,581	2,478	921	3,351	681	6,047	377
Utah	202,394	62	3,264	229	173	245	826	375	540	679	298
Vermont	111,389	22	5,063	198	131	198	583	261	427	474	235
Virginia	724,472	126	5,750	769	527	786	922	851	851	1,741	416
Washington	771,194	178	4,333	727	497	785	982	1,974	391	2,987	258
West Virginia	359,466	83	4,331	501	369	549	655	485	741	1,099	327
Wisconsin	1,038,267	185	5,612	1,458	1,031	1,494	695	1,321	786	2,996	346
Wyoming	114,248	35	3,264	230	164	228	506	148	772	417	274
Total	40,208,236	8,338	4,822	40,022	27,574	43,004	932	59,908	669	109,499	386

† Trade List Department Chilton Company.
* All retail outlets include passenger car and truck dealers, Independent Repair Shops, Super Service Stations and Wrecking and Body Establishments.

Wholesale Value of Repair Parts and Accessories Factory Sales, 1933-1948

Wholesale Value of Repair Parts and Accessories Sales, 1933-1948

Year	Wholesale Value
1933	$234,461,000
1934	304,642,000
1935	378,323,000
1936	448,527,000
1937	464,619,000
1938	348,068,000
1939	454,673,000
1940	553,004,000
1941	718,212,000
1942	471,957,000
1943	527,710,000
1944	816,724,000
1945	1,284,926,000
1946	1,752,918,000
1947	2,353,523,000
1948*	2,620,000,000

* Partly estimated.

The above data are based on Federal Excise tax collections. The excise tax does not apply on parts and accessories exported, so these values apply for domestic sales only. Prior to July 1, 1944, sales to U. S. government were not subject to the tax, but have been since that date.

Monthly Sales of Parts and Accessories in the U. S., 1943-1948*

Month	1948	1947	1946	1945	1944	1943
January	$185,849,230	$181,118,000	$127,253,760	$93,602,000	$62,639,440	$30,641,120
February	203,993,600	201,061,400	131,824,160	89,529,120	57,592,720	33,308,240
March	218,980,200	194,672,170	141,749,200	115,370,200	67,048,380	50,542,500
April	251,843,500	178,323,680	108,620,100	118,461,980	57,611,860	27,084,200
May	192,566,150	212,623,100	146,114,660	118,178,100	57,996,540	51,890,000
June	254,362,900	175,730,820	130,410,900	129,543,740	73,864,560	44,775,660
July	213,983,500	184,101,360	118,871,160	91,432,760	74,502,800	36,287,440
August	244,890,700	256,863,200	175,002,680	123,951,240	70,657,740	55,873,560
September	202,219,700	198,352,320	145,876,740	101,457,320	66,556,540	53,167,920
October	268,940,400	227,763,200	195,721,800	99,932,480	88,610,840	45,705,200
November	156,790,680	254,845,100	150,221,320	97,885,600	58,517,320	47,336,560
December		88,095,260	181,251,720	105,581,660	81,125,240	51,097,680
Total	†$2,620,000,000	$2,353,523,120	$1,752,918,200	$1,284,926,200	$816,723,980	$527,710,080

* As there is approximately a two months' lag between the month in which sales are made and the month in which collections are normally reported, the estimated sales volumes recorded above are based on the monthly collections commencing March 1st. † Partly estimated.

1948 State Distribution of Wholesale Sales of Parts and Accessories*

Alabama	$31,684,991	Maine	$18,698,931	Oklahoma	$43,629,759
Arizona	12,901,187	Maryland	35,702,997	Oregon	37,936,960
Arkansas	24,507,105	Massachusetts	72,309,487	Pennsylvania	168,397,557
California	236,368,645	Michigan	129,164,677	Rhode Island	14,731,968
Colorado	32,059,035	Minnesota	62,724,044	South Carolina	29,269,026
Connecticut	38,936,148	Mississippi	23,975,830	South Dakota	15,665,773
Delaware	5,798,384	Missouri	70,206,549	Tennessee	43,179,961
District of Columbia	10,716,766	Montana	13,982,642	Texas	147,190,617
Florida	52,084,525	Nebraska	32,427,343	Utah	12,838,607
Georgia	46,316,767	Nevada	4,062,519	Vermont	7,129,176
Idaho	14,738,781	New Hampshire	10,788,472	Virginia	50,015,681
Illinois	145,693,332	New Jersey	85,148,876	Washington	50,956,787
Indiana	78,583,097	New Mexico	10,960,566	West Virginia	25,931,444
Iowa	57,577,784	New York	202,429,677	Wisconsin	66,601,701
Kansas	49,185,743	North Carolina	54,137,398	Wyoming	7,952,831
Kentucky	37,091,483	North Dakota	16,179,448		
Louisiana	33,864,719	Ohio	147,564,204	Total	$2,620,000,000

* Estimated on basis of value of sales per motor vehicle times the motor vehicle registrations of each state.

Total registrations

CARS TRUCKS BUSES

U. S. Motor Vehicle Registrations, 1898-1948

Year	PASSENGER CARS Units	Per Cent of Total	Per Cent Increase	TRUCKS AND BUSES Units	Per Cent of Total	Per Cent Increase	TOTAL VEHICLES Units	Per Cent Increase
1898	800	....	....	.....	....	.....	800	....
1899	3,200	....	300	.....	....	.....	3,200	300
1900	8,000	....	150	.....	....	.....	8,000	150
1901	14,800	....	85	.....	....	.....	14,800	85
1902	23,000	....	55	.....	....	.....	23,000	55
1903	32,920	....	43	.....	....	.....	32,920	43
1904	54,590	98.7	66	700	1.3	.....	55,290	68
1905	77,400	98.2	42	1,400	1.8	100	78,800	43
1906	105,900	98.0	37	2,200	2.0	57	108,100	37
1907	140,300	98.0	33	2,900	2.0	32	143,200	32
1908	194,400	98.0	38	4,000	2.0	38	198,400	38
1909	305,950	98.1	57	6,050	1.9	51	312,000	57
1910	458,377	97.8	50	10,123	2.2	65	468,500	50
1911	618,727	96.8	35	20,773	3.2	105	639,500	36
1912	901,596	95.5	46	42,404	4.5	104	944,000	48
1913	1,190,393	94.6	32	67,667	5.4	60	1,258,060	33
1914	1,664,003	94.4	36	99,015	5.6	46	1,763,018	40
1915	2,332,426	93.6	42	158,506	6.4	60	2,490,932	41
1916	3,367,889	93.1	43	250,048	6.9	58	3,617,937	45
1917	4,727,468	92.4	42	391,057	7.6	56	5,118,525	41
1918	5,554,952	90.2	21	605,496	9.8	55	6,160,448	20
1919	6,679,133	88.2	21	897,755	11.8	48	7,576,888	23
1920	8,131,522	88.0	22	1,107,639	12.0	23	9,239,161	22
1921	9,212,158	87.8	14	1,281,508	12.2	16	10,493,666	11
1922	10,704,076	87.2	16	1,569,523	12.8	22	12,273,599	17
1923	13,253,019	87.8	24	1,849,086	12.2	18	15,102,105	23
1924	15,436,102	87.6	15	2,176,838	12.4	18	17,612,940	17
1925	17,439,701	87.5	13	2,501,023	12.5	15	19,940,724	13
1926	19,220,885	87.3	10	2,831,674	12.7	13	22,052,559	11
1927	20,142,120	87.2	5	2,997,439	12.8	6	23,139,559	5
1928	21,308,159	87.1	6	3,203,524	12.9	7	24,511,683	6
1929	23,060,421	87.1	8	3,442,087	12.9	7	26,502,508	8
1930	22,972,745	86.7	−0.4	3,559,254	13.3	3.4	26,531,999	0.1
1931	22,420,629	86.3	−2.4	3,573,267	13.7	0.4	25,993,896	−2.0
1932	20,994,092	86.2	−6.4	3,347,730	13.8	−6.3	24,341,822	−6.4
1933	20,557,493	86.2	−2.1	3,292,439	13.8	−1.7	23,849,932	−2.0
1934	21,535,199	86.6	4.7	3,346,268	13.4	1.6	24,881,467	4.3
1935	22,513,715	86.1	4.5	3,644,997	13.9	8.9	26,158,712	5.1
1936	24,044,432	85.6	6.8	4,047,277	14.4	11.0	28,091,709	7.4
1937	25,356,786	85.5	5.5	4,292,484	14.5	6.1	29,649,270	5.5
1938	25,264,589	85.5	−0.4	4,283,395	14.5	−0.2	29,547,984	−0.3
1939	26,147,798	85.3	3.5	4,496,770	14.7	5.0	30,644,568	3.7
1940	27,240,475	85.3	4.2	4,683,376	14.7	4.1	31,923,851	4.2
1941	29,240,417	85.6	7.3	4,911,990	14.4	4.9	34,152,407	7.0
1942	27,683,529	85.4	−5.3	4,741,298	14.6	−3.5	32,424,827	−5.1
1943	25,841,215	84.7	−6.7	4,657,882	15.3	−1.8	30,499,097	−6.0
1944	25,298,639	84.6	−2.1	4,611,966	15.4	−1.0	29,910,605	−1.9
1945	25,398,824	83.5	0.4	5,025,233	16.5	9.0	30,424,057	1.7
1946	27,834,543	82.6	9.6	5,858,813	17.4	16.6	33,693,356	10.7
1947	30,482,007	81.8	9.6	6,754,256	18.2	15.4	37,236,263	10.6
1948	32,911,801	81.8	10.8	7,296,495	18.2	10.8	40,208,296	10.8

− Denotes decrease. Sources: Public Roads Administration through 1930; 1931 to 1948 Automotive Industries count.

40.2 Million Motor

In addition to the 40,208,000
there are approximately 500,000

Total U. S. Motor Vehicle
As of the End of

STATES	PASSENGER CARS [1]		TRUCKS		BUSES		TOTAL MOTOR VEHICLES	
	1948	1947	1948	1947	1948	1947	1948	1947
Alabama [3]	366,308	331,056	127,065	108,251	2,085	1,976	495,458	441,283
Arizona	161,436	142,708	48,647	42,295	813	1,041 [1]	210,896	186,044
Arkansas	254,651	239,909	125,161	112,157	2,637	1,200	382,449	353,266
California [9]	3,054,000 [8]	2,807,922	531,800	487,929			3,585,000	3,295,851
Colorado	352,305	325,472	115,006	101,953	[2]	[2]	467,311	427,425
Connecticut	508,390	475,675	75,691	76,432	2,587	2,625	586,668	554,732
Delaware	65,810	61,154	17,557	15,913	[2]	[2]	83,367	77,067
District of Columbia	142,440	136,524	18,389	15,588	1,196	2,331	162,025	154,443
Florida	621,443	559,399	156,639	138,373	5,786	3,865	783,868	701,637
Georgia	540,903	499,631	167,525	150,108	4,965	4,986	713,393	654,725
Idaho	156,864	139,589	59,644	50,877			216,508	190,466
Illinois	1,899,690	1,753,109	315,980	282,125			2,215,670	2,035,234
Indiana	995,500	952,595	200,000	197,416	9,500	9,376	1,205,000	1,159,387
Iowa	732,558	674,615	150,973	133,868			883,531	808,483
Kansas	572,432	535,637	183,733	167,366	[2]	[2]	756,165	703,003
Kentucky	469,502	428,423	137,711	118,461		2,813	607,213	549,697
Louisiana	393,352	357,288	122,935	105,958	3,514	3,410	519,801	466,656
Maine	183,162	177,967	62,210	61,001	433	472	245,805	239,440
Maryland [4]	470,394	435,486	90,935	82,611	3,900	3,689	565,229	521,786
Massachusetts	943,952	890,128	151,609	144,113	5,724	5,794	1,101,285	1,040,035
Michigan	1,746,023	1,601,041	258,689	222,560	[2]	[2]	2,004,712	1,823,601
Minnesota	782,819	727,319	163,756	148,644	399	488	946,974	876,451
Mississippi	241,419	222,359	117,537	99,390	3,532	3,629	362,488	325,378
Missouri	862,000	829,152	215,000	209,997			1,077,000	1,039,149
Montana	145,402	131,783	70,391	63,871	[2]	[2]	215,793	195,654
Nebraska	398,565	370,471	105,750	98,296	840	625	505,155	469,392
Nevada	47,573	43,913	13,417	12,595	[5]	[5]	60,990	56,508
New Hampshire	117,501	114,608	31,623	35,663	[2]	[2]	149,124	150,271
New Jersey [4]	1,109,148	1,032,763	199,260	186,794	6,890	10,661 [1]	1,315,298	1,230,218
New Mexico	123,140	112,194	44,000	41,062	1,000	883	168,140	154,139
New York	2,664,890	2,472,224	418,416	425,323	11,249	40,918 [1]	3,094,555	2,938,465
North Carolina	655,569	615,574	167,824	147,703	2,941	2,957	826,334	766,234
North Dakota	169,901	152,208	68,919	60,777	124	323	238,944	213,308
Ohio [4]	2,100,000	1,965,307	237,000	270,284	3,600	3,611	2,340,600	2,239,202
Oklahoma	509,709	463,971	162,941	143,078	6,271	5,286	678,921	612,335
Oregon	448,545	405,015	115,648	115,845 [6]	1,496	1,640	565,689	522,500
Pennsylvania [4]	2,272,000	2,024,119	416,500	407,591	12,755	12,114	2,701,255	2,443,824
Rhode Island	188,949	177,168	29,662	28,413	656	679	219,267	206,260
South Carolina	357,265	331,908	91,849	85,376	2,918		452,032	417,284
South Dakota	185,860	168,211	60,165	50,545	305	295	246,330	219,051
Tennessee [4]	511,521	476,056	136,302	124,826	[5]	[5]	647,823	600,882
Texas	1,750,000	1,605,081	526,000	437,706	6,000	2,005	2,282,000	2,044,792
Utah	162,179	148,624	39,637	37,148	578	914	202,394	186,686
Vermont	95,861	92,684	15,355	14,818	173	171	111,389	107,673
Virginia	576,345	564,676	146,058	132,996	2,069	3,019	724,472	700,691
Washington [7]	620,689	572,259	145,784	133,102	4,721	3,537	771,194	708,898
West Virginia	271,976	270,961	86,217	76,940	1,273	1,398	359,466	349,299
Wisconsin	829,100	792,891	196,503	181,443	12,664	2,603	1,038,267	976,937
Wyoming	82,760	73,180	31,488	27,341			114,248	100,521
Total	32,911,801	30,482,007	7,170,901	6,612,922	125,594	141,334	40,208,296	37,236,263

([1]) Includes taxicabs. ([2]) Included with trucks. ([3]) For registration years October 1 through September 30. ([4]) For registration years April 1 through March 31. ([5]) Included with passenger cars. ([6]) Includes trailers. ([7]) For years ending November 15. ([8]) 140,000 light commercial vehicles registered as passenger cars in 1948 were transferred to trucks. ([9]) Does not include 150,000 cars and 10,000 trucks originally registered in other states.

Vehicles Registered in 1948

Vehicle Registrations Tabulated below.

Tax-Exempt Publicly-Owned Vehicles.

Registrations by States, 1948-1947 the Registration Year

Per Cent Change	Per Cent of Total		TRAILERS—1948			MOTORCYCLES		STATES
	1948	1947	Passenger Car or Tourist	Full and Semi-Trailers	Total All Trailers	1948	1947	
+ 12.3	1.23	1.19			8,557	8,174	6,431	Alabama [3]
+ 13.4	.53	.50	12,741	6,952	19,693	3,543	2,722	Arizona
+ 8.3	.95	.95	1,068	25,190	26,258	3,279	3,127	Arkansas
+ 5.4	8.67	8.86			390,000	60,000	53,234	California
+ 9.3	1.16	1.15			17,113	4,890	4,218	Colorado
+ 5.7	1.46	1.49	12,951	6,542	19,493	4,131	3,699	Connecticut
+ 8.2	.21	.21			3,041	627	557	Delaware
+ 4.9	.40	.41			1,505	898	837	District of Columbia
+ 11.7	1.95	1.88	22,727	48,007	70,734	15,565	12,999	Florida
+ 9.0	1.78	1.76	18,168	8,903	27,071	9,221	7,490	Georgia
+ 13.7	.54	.51			34,774	3,223	2,688	Idaho
+ 8.9	5.53	5.48			6,114	30,246	22,506	Illinois
+ 4.0	3.01	3.11	3,385	14,750	18,135	15,970	20,957	Indiana
+ 9.3	2.20	2.17			134,169	11,171	8,933	Iowa
+ 7.6	1.89	1.89			16,415	9,430	7,755	Kansas
+ 10.5	1.51	1.48				7,941	4,000	Kentucky
+ 11.4	1.30	1.25	1,599	28,671	30,270	7,182	6,186	Louisiana
+ 2.7	.61	.64			17,974	2,982	2,793	Maine
+ 8.3	1.41	1.40			15,336	7,854	6,450	Maryland [4]
+ 5.9	2.75	2.79			46,417	6,884	5,869	Massachusetts
+ 9.9	5.01	4.90	15,876	211,870	227,746	16,977	19,475	Michigan
+ 8.0	2.36	2.35	68,791	36,879	105,670	11,609	9,137	Minnesota
+ 11.4	.90	.87	10,070	7,381	17,451	2,477	2,114	Mississippi
+ 3.6	2.69	2.79			68,000	7,000	8,372	Missouri
+ 10.3	.54	.53			6,148	1,368	1,171	Montana
+ 7.6	1.26	1.26	3,050	7,200	10,250	5,480	5,034	Nebraska
+ 7.9	.15	.15			4,405	552	316	Nevada
— 0.7	.37	.40			9,248	2,244	1,702	New Hampshire
+ 6.9	3.28	3.30			23,984	10,479	9,936	New Jersey [4]
+ 9.1	.42	.41			5,000	2,100	1,631	New Mexico
+ 5.3	7.73	7.89			105,202	26,192	22,729	New York
+ 7.8	2.06	2.06			73,017	15,003	11,723	North Carolina
+ 12.0	.60	.57	1,880		1,880	1,234	1,138	North Dakota
+ 4.5	5.84	6.01			188,000	30,000	30,028	Ohio [4]
+ 10.9	1.69	1.64	1,906	10,108	12,014	7,477	6,117	Oklahoma
+ 8.3	1.41	1.40	9,873	9,602	19,475	7,116	6,017	Oregon
+ 10.5	6.75	6.56			81,885	32,214	26,375	Pennsylvania [4]
+ 6.3	.55	.55			3,696	1,916	1,722	Rhode Island
+ 8.3	1.13	1.12			10,244	7,516	5,753	South Carolina
+ 12.4	.61	.59			32,638	2,307	1,975	South Dakota
+ 7.8	1.62	1.61				9,121	7,499	Tennessee [4]
+ 11.6	5.69	5.49	15,000	110,000	125,000	35,000	24,194	Texas
+ 8.4	.50	.50			1,550	1,791	1,414	Utah
+ 3.4	.28	.29			5,558	1,108	889	Vermont
+ 3.4	1.81	1.88	20,844	9,913	30,757	11,456	12,172	Virginia
+ 8.8	1.92	1.90	2,807	55,217	58,024	7,421	7,145	Washington [7]
+ 2.9	.90	.94	7,732	915	8,647	4,968	3,814	West Virginia
+ 6.2	2.59	2.62	4,114	8,550	12,664	11,171	8,677	Wisconsin
+ 13.6	.28	.27			13,600	1,100	783	Wyoming
+ 7.7	100.00	100.00			2,164,822	487,608	422,503	Total

Note: In the above tabulation we have endeavored to make as accurate a count as existing conditions permit. This census is compiled from material secured direct from the state motor vehicle commissioners. Wherever possible, duplications, occasioned by transfers and non-resident registrations, have been eliminated. Data are for the registration year rather than the calendar year, even though this necessitates partial estimates in the case of those states whose registration year ends February or March of the following year.

1949 Census of Truck Fleets

STATE	Total Fleets	SIZE OF FLEET 8-24 Trucks	25-49 Trucks	50 & Over Trucks
Alabama	322	145	77	100
Arizona	80	36	21	23
Arkansas	159	85	34	40
California	1,652	701	347	604
Colorado	271	156	42	73
Connecticut	475	301	102	72
Delaware	86	42	17	27
District of Columbia	217	86	46	85
Florida	395	176	92	127
Georgia	378	208	71	99
Idaho	74	37	16	21
Illinois	1,634	876	327	431
Indiana	707	405	159	143
Iowa	409	269	91	49
Kansas	271	176	53	42
Kentucky	277	161	62	54
Louisiana	421	252	80	89
Maine	159	95	37	27
Maryland	468	254	89	125
Massachusetts	1,214	790	219	205
Michigan	1,162	643	239	280
Minnesota	515	252	117	146
Mississippi	110	63	16	31
Missouri	705	376	133	196
Montana	124	69	27	28
Nebraska	245	138	51	56
Nevada	38	8	23	7
New Hampshire	98	62	23	13
New Jersey	1,026	598	209	219
New Mexico	71	37	17	17
New York	2,325	1,233	447	645
North Carolina	497	279	79	139
North Dakota	64	42	12	10
Ohio	1,637	931	313	393
Oklahoma	359	198	74	87
Oregon	308	168	70	70
Pennsylvania	2,361	1,408	446	507
Rhode Island	228	147	41	40
South Carolina	206	122	50	34
South Dakota	71	40	11	20
Tennessee	413	223	82	108
Texas	1,058	537	192	329
Utah	141	69	25	47
Vermont	48	31	5	12
Virginia	461	242	93	126
Washington	523	286	94	143
West Virginia	337	192	71	74
Wisconsin	679	372	134	173
Wyoming	64	37	18	9
Total	25,543	14,054	5,094	6,395

Truck Fleets by Vocation

8 or More Trucks per Fleet

	Total
Bakeries, Candies	1,430
Bottlers, Breweries	1,020
Coal Mines and Dealers	890
Contractors, Builders and Suppliers	1,782
Dairy Products, Milk, Ice Cream Manufacturers	1,746
Department Stores, Furniture and Other Retailers	314
Express, Hauling, Inter and Intra States	6,152
Government, State, County, Municipal	2,981
Ice Manufacturers and Dealers	482
Laundries, Cleaners, Dyers	1,214
Manufacturers	762
Meats, Grain, Frozen Foods, Produce, etc.	1,966
Oil, Gasoline, Greases	1,268
Public Utilities	2,592
Mining, Cement, Rock-Sand, etc.	360
Miscellaneous	584
Total	25,543

Summary of Cars in Use by Makes and by Year of Manufacture

	July 1 Total	48	47	46	45-42	41	40	39	38	37	36	35	34	33	32	Prior to 32	Yr. Not Given
Buick	1,983,602	112,101	244,332	139,576	82,123	348,917	262,973	183,384	141,912	179,244	123,447	35,718	28,621	16,347	15,326	57,294	14,287
Cadillac	236,516	22,891	53,232	25,245	13,281	57,973	13,515	11,594	7,686	10,720	8,025	2,219	1,747	903	1,061	4,723	1,501
Chevrolet	7,170,760	320,632	660,054	390,750	228,370	977,535	756,216	552,880	440,096	733,420	754,606	386,842	275,957	187,602	109,331	336,109	54,950
Chrysler	776,300	43,249	94,810	69,383	30,668	144,399	84,757	60,724	41,156	80,245	40,979	22,100	12,607	8,997	7,081	29,162	6,083
Crosley	36,000	12,981	17,277	2,008	1,056	1,154	301	560	53	92	38	15	8	6	9	30	413
DeSoto	573,304	33,961	73,291	58,298	21,116	91,025	63,701	49,534	32,915	66,622	30,993	15,923	4,699	7,003	6,221	13,914	4,088
Dodge	1,889,420	91,789	213,721	146,803	61,977	221,273	182,450	168,158	97,310	241,088	201,508	101,934	46,839	35,355	9,396	53,901	15,918
Ford	6,318,273	246,484	424,338	411,566	147,627	648,324	510,512	409,666	309,192	676,000	617,502	448,798	248,711	84,976	83,701	998,889	52,087
Frazer	39,908	31,589	55,837	676													1,806
Graham	45,520					854	1,294	3,524	2,947	10,760	7,457	5,758	2,617	1,701	1,278	6,699	621
Hudson	706,485	60,716	78,043	76,112	34,048	81,457	75,230	42,138	34,326	79,686	61,393	29,317	16,583	5,939	3,936	20,474	6,087
Hupmobile	19,075					246	98	754	952	196	1,093	2,731	1,582	1,113	1,279	8,631	401
Kaiser	119,538	55,930	60,807	1,211													1,590
La Salle	98,797					20,007	19,303	12,355	24,237	8,794	5,246	2,184	986	798	3,358	1,529	
Lincoln	152,725	13,808	19,267	13,361	5,482	18,977	18,857	16,757	13,322	19,527	8,274	752	669	358	523	1,460	1,331
Mercury	459,372	66,316	84,663	73,480	19,761	83,472	72,311	53,215									6,154
Nash	629,799	70,454	94,049	84,713	27,401	77,016	54,757	42,051	30,203	63,185	34,043	12,589	9,884	2,337	4,805	18,883	4,019
Oldsmobile	1,540,960	81,927	179,677	108,319	60,503	249,225	180,623	121,568	83,699	165,656	148,406	80,573	32,682	9,539	4,751	22,400	11,410
Packard	547,029	48,405	41,781	32,150	26,810	64,582	63,711	40,491	42,552	87,048	39,472	15,791	3,579	2,213	3,591	9,553	5,302
Plymouth	3,661,449	140,585	322,542	229,212	119,182	486,188	384,192	351,694	233,726	438,705	383,391	219,264	146,658	102,871	41,030	32,028	30,181
Pontiac	1,777,129	102,606	212,995	128,220	74,235	307,923	206,100	132,379	86,649	200,197	136,218	74,368	29,389	26,949	10,017	34,718	14,188
Studebaker	789,043	83,453	131,748	25,630	41,818	119,739	93,825	71,040	35,999	69,621	38,957	21,197	15,360	5,727	6,055	23,346	5,528
Willys	233,237	23,353	32,938	22,507	15,011	21,030	22,533	10,121	11,738	35,408	6,523	3,702	1,894	2,746	2,813	18,817	2,103
Miscellaneous	113,478	10,857	4,955	2,874	1,838	5,409	5,342	3,741	2,660	4,434	6,217	4,709	3,909	4,199	4,154	37,101	11,081
Totals	29,967,719	1,673,487	3,100,367	2,048,095	1,012,305	4,004,717	3,093,315	2,345,275	1,661,648	3,186,089	2,657,338	1,489,556	885,957	508,667	316,956	1,731,288	252,658

42% of Cars and 35% of Trucks are 10 or More Years Old

The 1948 average age of passenger cars in use was 8.73 years as compared with 5.33 years in 1941. Trucks have an average age of 7.43 years in comparison with prewar age of 5.55 years

Number and Per Cent of Cars in Use, by Age Groups

	1941	% of Total		1946	% of Total		1947	% of Total		1948	% of Total	
	Units	Simple	Cumul.	Units	Simple	Cumul.	Units	Simple	Cumul.	Units	Simple	Cumul.
Under 1 year	3,239,741	11.79	11.79	448,192	1.80	1.80	1,367,295	5.01	5.01	1,673,487	5.63	5.63
1-2 years old	3,111,943	11.32	23.11	0	....	....	2,056,130	7.54	12.55	3,100,367	10.43	16.06
2-3 years old	2,401,802	8.74	31.85	0	....	....	0	....	....	2,048,095	6.89	22.95
3-4 years old	1,732,560	6.30	38.15	0	....	....	0	....	....	0	....	....
4-5 years old	3,481,335	12.67	50.82	997,268	4.00	5.80	0	....	....	0	....	....
5-6 years old	3,175,362	11.55	62.37	4,106,927	16.46	22.26	1,065,336	3.90	16.45	0	....	....
6-7 years old	2,138,773	7.78	70.15	3,182,089	12.75	35.01	4,085,413	14.97	31.42	1,012,305	3.41	26.36
7-8 years old	1,590,608	5.79	75.94	2,425,996	9.72	44.73	3,113,260	11.41	42.83	4,004,717	13.48	39.84
8-9 years old	1,120,086	4.08	80.02	1,736,349	6.96	51.69	2,378,798	8.72	51.55	3,093,315	10.41	50.25
9-10 years old	735,440	2.68	82.70	3,390,202	13.58	65.27	1,679,027	6.15	57.70	2,345,276	7.89	58.14
10-11 years old	1,211,262	4.41	87.11	2,892,560	11.59	76.86	3,303,955	12.11	69.81	1,661,648	5.59	63.73
11-12 years old	1,204,897	4.38	91.49	1,674,568	6.71	83.57	2,789,570	10.22	80.03	3,186,089	10.72	74.45
12-13 years old	1,278,055	4.65	96.14	1,021,374	4.09	87.66	1,592,404	5.84	85.87	2,657,338	8.94	83.39
13-14 years old	560,760	2.04	98.18	606,673	2.43	90.09	967 340	3.55	89.42	1,489,556	5.01	88.40
14-15 years old	501,988*	1.82	....	368,544	1.48	91.57	567,768	2.08	91.50	885,957	2.98	91.38
15-16 years old	....	....	....	626,193	2.51	94.08	345,826	1.27	92.77	508,667	1.71	93.09
16-17 years old	....	....	....	591,940	2.37	96.45	596,039	2.18	94.95	316,956	1.07	94.16
17 and older	....	....	....	888,843	3.55	....	1,377,057	5.05	....	1,731,288	5.84	....
Total	27,484,612	100.00	100.00	24,957,718	100.00	100.00	27,285,218	100.00	100.00	29,715,061	100.00	100.00
Age not known	215,399	....	....	184,910	....	....	236,177	....	....	252,658	....	....
Total in Use	27,700,011	....	....	25,142,628	....	....	27,521,395	....	....	29,967,719	....	....
Average age of known models is	5.33 yrs.			8.94 yrs.			8.91 yrs.			8.73 yrs.		

* Includes cars in older age groups. † Based on data from R. L. Polk & Co. and Reuben H. Donnelley Corp. as of July 1 of each year.

Number and Per Cent of Trucks in Use, by Age Groups

	1941	% of Total		1946	% of Total		1947	% of Total		1948	% of Total	
	Units	Simple	Cumul.	Units	Simple	Cumul.	Units	Simple	Cumul.	Units	Simple	Cumul.
Less than 1 year	467,000	10.43	10.43	241,393	4.81	4.81	366,847	6.27	6.27	525,189	8.06	8.06
1-2 years old	552,000	12.32	22.75	175,181	3.49	8.30	785,853	13.44	19.71	832,635	12.79	20.85
2-3 years old	438,000	9.78	32.53	84,234	1.68	9.98	188,901	3.23	22.94	769,516	11.82	32.67
3-4 years old	334,000	7.46	39.99	11,463	.23	10.21	89,542	1.53	24.47	185,614	2.85	35.52
4-5 years old	553,000	12.35	52.34	279,448	5.57	15.78	25,020	.43	24.90	85,481	1.31	36.83
5-6 years old	515,000	11.50	63.84	691,859	13.79	29.57	310,574	5.31	30.21	26,456	.41	37.24
6-7 years old	332,000	7.41	71.25	525,101	10.47	40.04	690,221	11.80	42.01	297,128	4.56	41.80
7-8 years old	249,000	5.56	76.81	418,857	8.35	48.39	511,994	8.76	50.77	661,726	10.16	51.96
8-9 years old	124,000	2.77	79.58	313,945	6.26	54.65	405,418	6.93	57.70	490,969	7.54	59.50
9-10 years old	90,000	2.01	81.59	516,530	10.30	64.95	302,356	5.17	62.87	385,731	5.92	65.42
10-11 years old	163,000	3.64	85.23	472,989	9.43	74.38	496,104	8.48	71.35	285,537	4.38	69.80
11-12 years old	164,000	3.66	88.89	295,673	5.89	80.27	451,660	7.72	79.07	461,843	7.09	76.89
12-13 years old	202,000	4.51	93.40	213,164	4.25	84.52	281,566	4.82	83.89	418,478	6.43	83.32
13-14 years old	103,000	2.30	95.70	99,667	1.99	86.51	202,399	3.47	87.36	257,376	3.95	87.27
14 and older	192,000	4.30	....	676,744	13.49	....	738,457	12.64	....	828,286	12.73	....
Total	4,479,000	100.00	100.00	5,016,248	100.00	100.00	5,846,912	100.00	100.00	6,511,965	100.00	100.00
Age not known	73,000	....	....	52,544	....	....	85,469	....	....	93,325	....	....
Total in use	4,552,000	....	....	5,068,792	....	....	5,932,381	....	....	6,605,290	....	....
Average age of known models is	5.55 yrs.			8.38 yrs.			7.86 yrs.			7.43 yrs.		

† Based on data from R. L. Polk & Co. and Reuben H. Donnelley Corp. as of July 1st of each year.

CARS IN USE BY MAKES, STATES AND

BUICK

Model	Ala.	Ariz.	Ark.	Calif.	Colo.	Conn.	Del.	D. C.	Fla.	Ga.	Idaho	Ill.	Ind.	Iowa	Kan.	Ky.	La.	Me.	Md.	Mass.	Mich.	Minn.	Miss.	Mo.	Mont.
6 Mos. '48	679	386	568	8422	617	1524	271	764	1543	1804	366	8641	4002	1657	1430	1087	1198	461	2079	3746	16922	1938	612	2150	335
'47	1929	1030	1350	21087	1978	3998	649	1820	4830	3632	967	19794	7039	3718	2952	2546	2810	1136	3634	7981	17211	4217	1608	5386	876
'46	1195	702	882	12211	1202	2365	378	1087	3124	2058	574	10894	3646	2137	1640	1481	1572	700	1964	4935	9268	2351	948	3007	504
'45-'42	1018	505	560	7663	949	1467	216	563	2341	1425	414	6110	2311	1214	1077	980	1255	410	1062	2344	4427	1459	776	1647	282
'41	3362	2016	1867	39032	3593	6612	811	2782	9001	4796	1440	24677	10639	4833	4374	3802	4629	1561	3000	10519	19871	5821	2324	7292	1185
'40	2111	1316	1115	33205	2576	5753	756	1958	6112	2865	924	18189	7331	3817	2889	2710	2613	1590	3194	9948	12640	4815	1374	5388	810
'39	1534	915	822	22989	1889	4721	487	1116	3993	2059	610	12210	4172	3086	2210	1994	1849	1111	2084	6865	8151	3677	999	3922	644
'38	1024	788	565	18095	1303	3840	432	838	2957	1500	476	9542	3374	2327	1637	1431	1115	952	1670	5117	5524	2812	552	2787	477
'37	861	996	733	22039	2081	4576	540	809	3449	1554	649	11975	4695	2796	2116	1896	1080	1134	1699	6640	9100	2599	818	3585	612
'36	695	638	463	15961	1562	3382	378	450	2391	1079	408	7268	3059	1861	1547	1241	666	977	1286	5306	5011	2588	381	2270	427
'35	780	173	124	6001	949	1467	216	563	2341	1425	414	6110	2311	1214	1077	980	1255	410	1062	2344	4427	1459	776	1647	282
'34	112	147	92	3439	344	904	108	82	446	227	89	1453	639	453	380	309	116	301	217	1501	799	665	87	560	94
'33	67	84	33	2177	174	563	54	38	277	123	39	883	281	169	165	131	65	161	102	831	372	382	29	316	60
'32	59	83	50	1673	204	495	54	55	238	112	28	672	304	220	183	126	64	190	122	771	373	364	31	317	52
Before'32	154	395	153	11665	879	1309	162	87	609	304	335	2800	1253	1841	1029	347	148	593	469	1476	1689	2033	127	1265	275
Unid.*	20	18	14	1070	25	86		611	120	188	31	371	54	22	88	12	162	2	7574	18	1690	25	53	391	4
Total	14960	10192	9301	226929	19715	42461	5404	13167	42089	23815	7438	137525	54031	30926	24202	20424	19490	11559	30791	69375	114111	36557	10638	41009	6700

CADILLAC

Model	Ala.	Ariz.	Ark.	Calif.	Colo.	Conn.	Del.	D. C.	Fla.	Ga.	Idaho	Ill.	Ind.	Iowa	Kan.	Ky.	La.	Me.	Md.	Mass.	Mich.	Minn.	Miss.	Mo.	Mont.
6 Mos. '48	103	103	85	2067	177	456	58	234	492	274	45	2144	867	195	126	137	216	105	371	914	3573	368	81	435	43
'47	301	241	201	5513	420	1179	143	527	1853	727	129	5169	1450	504	286	400	597	255	686	1804	3908	624	180	1005	113
'46	139	120	88	3665	228	599	70	239	925	365	54	2270	627	211	122	182	263	137	345	977	1368	320	83	476	43
'45-'42	101	70	50	1525	139	321	32	127	568	189	27	1223	299	101	70	102	197	65	115	518	702	151	68	262	21
'41	366	368	196	10368	548	1520	152	566	2248	787	112	4823	1294	365	304	457	560	295	587	2284	2168	619	196	1205	83
'40	53	85	42	3164	113	331	32	129	447	146	24	986	282	75	46	86	123	67	186	563	319	130	23	245	24
'39	67	64	32	2083	150	298	32	120	356	129	19	922	166	67	70	96	116	48	96	468	292	139	29	224	23
'38	35	50	27	1629	70	228	19	74	291	91	7	503	150	47	43	51	56	37	90	355	221	74	23	150	18
'37	42	58	25	1595	111	396	38	68	353	113	17	716	180	84	54	105	74	71	76	588	352	109	28	154	9
'36	38	41	19	1477	73	255	19	52	278	73	19	484	158	82	43	61	43	50	57	428	241	106	16	136	7
'35	3	20	4	709	15	58	7	9	52	19	5	85	42	18	16	25	14	15	29	99	49	29	7	33	2
'34	3	9	4	420	15	79	7	9	43	14	2	89	30	13	13	21	8	8	16	92	30	14	1	24	1
'33	4	7	1	210	8	29	2	2	18	3	1	32	11	12	6	14	5	12	2	35	17	17	5	12	2
'32	6	10	2	266	9	38	6	2	26	16	4	54	11	8	6	3	8	6	6	45	11	10	6	10	1
Before'32	12	37	13	1394	83	213	13	16	90	20	14	153	51	43	16	39	15	31	23	207	73	79	7	56	15
Unid.*	2	5	2	189	4	14	6	58	24	14	4	49	8	2	4		11	1	570	6	169	1	4	16	
Total	1275	1288	791	35636	2151	6014	634	2233	8064	2980	482	19702	5826	1827	1225	1779	2315	1201	3255	9385	13493	2790	757	4523	405

CHEVROLET

Model	Ala.	Ariz.	Ark.	Calif.	Colo.	Conn.	Del.	D. C.	Fla.	Ga.	Idaho	Ill.	Ind.	Iowa	Kan.	Ky.	La.	Me.	Md.	Mass.	Mich.	Minn.	Miss.	Mo.	Mont.
6 Mos. '48	3809	928	2714	21759	2408	3904	692	2067	4081	5727	884	23020	12740	7029	5543	4191	4463	1336	6606	7456	38276	6759	2687	9389	1216
'47	9517	2206	5852	46557	6368	7992	1561	4406	11027	12267	2697	43088	20073	16110	11550	9262	10064	2994	10782	15009	41714	15110	6056	21585	3099
'46	6324	1517	3891	28603	3875	4888	1037	2300	7433	7906	1810	24833	12038	9056	7125	6241	5655	1969	5729	9346	20598	9276	3993	12107	1798
'45-'42	4849	1067	2745	13880	2490	2812	516	872	4731	5748	1101	11672	7133	5563	4561	3777	4140	1272	2458	4686	11705	5429	2988	5872	978
'41	17483	4819	9514	84311	10563	12960	2250	3979	18757	19379	4362	50421	29984	22750	19844	14501	14543	5123	9249	23066	50496	22193	10365	27325	4045
'40	12000	3680	7038	71388	7747	10459	1905	2948	13091	14077	3557	41236	23394	18757	14183	11800	10715	4256	8578	18320	35251	17973	7721	24258	3483
'39	10102	2699	5886	46047	6446	7500	1385	1533	9561	11223	2580	29054	14785	16594	11258	9049	8142	3354	5747	14898	23006	14056	6214	18480	2537
'38	6107	2162	4088	40282	5313	5483	1037	964	6822	6305	2017	23861	12840	14705	11038	7551	5994	2653	4089	10627	14481	14693	4364	15116	1884
'37	10825	3846	6028	58007	8480	10549	2076	1309	10972	11052	3845	37953	24341	20788	16052	12549	8232	4406	6056	20806	35742	20191	6775	21898	3488
'36	10056	3772	6697	63426	9633	10027	1903	1120	10979	10837	4080	39387	26977	23249	18485	12872	8691	4750	5845	19450	34468	23263	6861	24532	3867
'35	4848	1755	3522	39650	4791	5238	865	459	5231	6040	2350	17889	14514	11971	9959	7206	3885	2475	3242	10385	13846	12735	3323	12989	2269
'34	3372	1522	2584	24801	2883	3965	692	261	3938	4107	1764	11704	8592	8883	7581	5107	2723	2080	1795	7684	8619	9530	2451	9222	1525
'33	1844	933	1809	20353	1817	3021	516	118	2295	2764	843	7882	5032	5858	5006	3753	1648	1317	1069	5059	4636	6844	1495	7386	876
'32	780	515	976	10540	1015	1764	346	105	1317	1246	448	4751	2672	3512	2990	2260	1056	881	995	2612	2955	4628	701	4443	481
Before'32	2422	1974	2610	41499	2732	2979	516	151	3077	3447	2505	18867	9685	17541	12121	6077	2289	2132	2261	3363	8808	17744	2196	16427	2118
Unid.*	107	90	83	2678	107	181		1449	384	853	119	3444	138	82	433	34	764	4	21747	157	14116	125	253	4051	6
Total	104345	33425	66049	613981	78671	93702	17297	23883	113496	122978	34952	386662	225238	202448	157731	116230	92982	41022	96248	172724	356717	200379	88543	235038	33652

CHRYSLER

Model	Ala.	Ariz.	Ark.	Calif.	Colo.	Conn.	Del.	D. C.	Fla.	Ga.	Idaho	Ill.	Ind.	Iowa	Kan.	Ky.	La.	Me.	Md.	Mass.	Mich.	Minn.	Miss.	Mo.	Mont.
Mos. '48	326	182	278	3261	431	508	86	268	775	628	212	3364	1527	910	686	679	549	185	662	1168	4337	1074	376	940	200
'47	844	460	528	8401	1095	1403	190	615	2098	1205	471	6989	2604	1849	1541	1157	1135	398	1332	2606	5356	2369	832	2220	497
'46	395	361	399	7044	738	1082	155	427	1818	1083	284	5270	1961	1138	870	754	732	296	1007	2288	3361	1458	475	1515	308
'45-'42	256	183	170	3319	333	563	82	230	1024	388	150	1945	842	406	358	312	417	104	380	815	1296	686	174	591	118
'41	961	978	827	20557	1740	2622	308	1156	4009	1486	571	9440	3921	2003	1662	1385	1441	545	1724	3953	6149	2851	670	2802	622
'40	595	526	387	12544	866	1455	189	527	1969	821	327	5184	2439	1193	985	954	709	326	1226	2443	3619	1612	431	1782	369
'39	406	408	252	8683	634	1110	138	405	1316	529	213	3908	1507	931	740	709	527	268	704	1917	2268	1210	236	1241	263
'38	228	269	187	5440	383	729	103	227	724	308	189	2362	1131	854	522	546	402	222	504	1262	1257	900	170	881	172
'37	337	528	302	8877	869	1469	223	302	1539	635	374	5245	2431	1196	1028	999	510	423	710	2879	2745	1822	275	1381	421
'36	162	238	146	6051	556	767	103	153	770	290	188	2365	1285	734	568	557	247	185	372	1243	1183	961	156	804	263
'35	71	125	93	3041	234	383	52	58	347	143	110	1232	712	436	354	337	70	103	268	729	589	611	74	430	158
'34	64	57	61	1416	159	296	34	23	176	111	65	545	279	210	216	204	59	68	104	473	267	283	44	230	69
'33	33	37	22	1226	99	235	18	22	139	70	27	407	215	101	74	172	44	44	84	313	185	203	28	138	37
'32	61	31	25	942	96	152	18	24	123	69	23	266	162	111	74	102	32	60	47	215	162	261	18	143	25
Before'32	86	188	105	5405	457	531	52	28	349	112	185	1280	760	811	526	387	97	228	204	543	664	1150	85	680	204
Unid.*	3	14	2	412	19	25		247	37	72	11	110	34	6	49	5	51		2719	10	1341	14	20	163	1
Total	5027	4567	3582	96632	8729	13311	1721	4712	17215	7928	3400	49912	21802	12705	10280	9279	7021	3535	12047	22857	34779	17465	4051	15971	3727

CROSLEY

Model	Ala.	Ariz.	Ark.	Calif.	Colo.	Conn.	Del.	D. C.	Fla.	Ga.	Idaho	Ill.	Ind.	Iowa	Kan.	Ky.	La.	Me.	Md.	Mass.	Mich.	Minn.	Miss.	Mo.	Mont.
6 Mos. '48	39	60	34	938	30	164	22	78	511	184	16	1457	909	142	301	183	175	68	260	518	779	244	90	412	5
'47	276	85	96	1671	107	351	26	137	1129	258	70	651	903	175	193	422	143	125	312	409	805	312	94	404	34
'46	63	5	15	88	19	9	7	7	141	70	9	115	27	6	16	45	41	25	11	87	58	7	53	60	9
'45-'42	19	2	3	36	6	33	3	26	88	16		49	28	2	8	14	8	2	9	74	29	10	6	11	1
'41	16	4	1	69		56	3	19	103	13		50	49	3	4	14	3	13	2	89	15	14	3	7	
'40	4			26	1	9		3	27	6	1	20	10	1	4	2	3	3		21	9	6	6	8	
'39	6	5	4	39	2	13		1	28	3	1	40	31	27	7	15	5	4	1	32	20	28	3	12	1
'38				4	1				3			5	1	1	1	1			1	2		2	4	3	
'37	1			15				1	8	3	1	6	10		5	2	3	1		2		2	2	3	
'36		2		4					1	1		2	5	1	2				1	2	2	2	1	2	
'35				1								1	1											1	
'34														1								1			
'33										1						1							1		
'32				3								1	6		1		1								
Before'32				2		1		1	1				1			2						4	1	1	
Unid.*	1	1		108		2	1	14	8	4		8	5	1	1	1	5		93	1	21			6	
Total	425	164	153	3004	166	637	62	294	2045	563	99	2405	1985	360	541	702	388	239	889	1235	1737	632	265	930	55

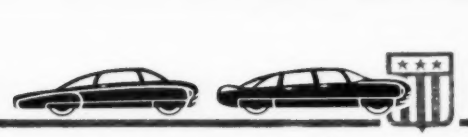
DE SOTO

Model	Ala.	Ariz.	Ark.	Calif.	Colo.	Conn.	Del.	D. C.	Fla.	Ga.	Idaho	Ill.	Ind.	Iowa	Kan.	Ky.	La.	Me.	Md.	Mass.	Mich.	Minn.	Miss.	Mo.	Mont.
6 Mos. '48	235	140	141	3689	207	450	55	167	483	425	122	2590	1086	508	333	279	315	164	531	1053	3944	454	134	638	125
'47	480	357	301	6865	499	1059	132	426	1480	847	291	5403	1775	1012	700	618	503	398	1014	2307	4025	1143	268	1466	281
'46	431	266	290	7441	452	937	112	337	1263	721	246	4123	1493	780	585	525	468	289	880	2009	2934	957	239	1227	223
'45-'42	221	163	127	2437	188	354	45	184	617	335	99	1105	624	270	291	228	357	102	284	671	979	406	114	439	56
'41	746	406	329	14295	854	1729	165	535	2092	1004	400	5960	3000	1070	1008	704	798	381	819	2976	4148	1544	331	2030	242
'40	493	309	226	9041	502	1285	133	374	1133	537	251	4310	1978	697	653	542	501	312	633	1907	2414	1157	238	1474	197
'39	412	258	189	6521	436	1028	100	265	877	415	204	3235	1489	580	471	474	372	248	450	1697	1752	962	179	1301	132
'38	251	202	118	4788	326	749	67	93	513	286	145	2116	976	495	458	323	225	182	285	1005	1054	755	149	835	85
'37	395	405	227	8177	724	1537	144	176	1143	457	291	4677	2256	855	895	746	340	378	471	2145	2717	1604	167	1581	181
'36	104	211	80	5582	322	661	67	64	512	200	150	2012	1119	516	412	338	128	96	175	820	937	702	60	681	133
'35	47	94	48	2936	178	339	33	33	284	102	71	947	557	325	294	190	84	55	118	404	409	373	23	359	67
'34	20	50	21	856	70	86	11	2	113	24	29	235	156	78	75	46	26	30	26	141	147	82	11	108	28
'33	14	27	33	1346	64	202	11	2	99	26	30	427	231	80	99	103	39	42	43	194	142	126	9	233	24
'32	17	37	16	1048	41	143	11	10	78	27	22	282	214	83	86	100	25	34	55	129	181	106	4	234	17
Before'32	40	111	55	2760	170	336	22	8	161	54	88	776	622	221	215	169	95	80	94	201	407	318	32	358	80
Unid.*	6	3	5	409	5	20		158	34	39	10	111	10	5	22	5	18		1776	5	751	8	13	137	
Total	3912	3049	2206	80191	5036	10915	1108	2934	10862	5499	2439	38309	17588	7575	6557	5390	4294	2791	7464	17684	26941	10697	1971	13075	1871

Unid.* Unidentified as to year of manufacture.

Data From the Reuben H. Donnelley Corp. are as of July 1, 1948.

BY YEAR OF MANUFACTURE



	Model	Neb.	Nov.	N.H.	N. J.	N.M.	N. Y.	N. C.	N. D.	Ohio	Okla.	Ore.	Pa.	R. I.	S.C.	S. D.	Tenn.	Tex.	Utah	Vt.	Va.	Wash.	W.Va.	Wis.	Wyo.	Totals
BUICK	6 Mos. '48	784	137	351	3575	365	12195	1625	193	6092	1105	1101	7295	509	782	484	1223	3956	380	254	1797	1110	590	2989	210	112101
	'47	1758	362	685	9877	720	26782	3613	711	16812	2737	2959	16458	1302	1739	840	2921	10377	1021	548	4393	4061	1116	7816	538	244332
	'46	947	199	409	5791	458	15935	2193	367	9293	1509	1787	10112	897	1057	454	1604	6208	608	350	2225	2495	1033	2602	340	139576
	'45-'42	558	143	177	3189	374	7269	1479	250	5356	929	1210	4875	541	645	244	1322	5381	514	167	852	1799	730	1369	253	82123
	'41	2243	571	964	14140	1154	33398	5841	860	23802	3926	5136	21569	2102	3107	1043	4690	17027	1806	765	5317	7690	2791	6335	821	346917
	'40	1664	402	1063	12332	805	29243	3580	624	17680	2895	2963	18770	1787	1672	716	2571	9316	1114	742	4246	4736	2129	5108	596	262973
	'39	1307	221	713	8962	527	20417	2724	444	12146	2190	2221	12681	1438	1090	601	2051	5776	733	557	3095	3502	1542	3907	430	183384
	'38	1015	160	538	8200	452	17715	2002	321	8409	1615	1662	10707	872	663	452	1362	4818	610	485	2109	2490	1238	2835	277	141912
	'37	1306	261	686	10361	504	21852	2001	304	12611	1929	2428	14165	1179	788	555	1515	4540	957	530	2252	3717	1481	4115	375	179244
	'36	1004	177	634	6824	310	16806	1200	234	7138	1422	1540	10265	1015	529	496	976	2683	656	497	1422	2154	1030	2716	292	123447
	'35	283	32	207	1833	85	4536	380	118	1781	543	308	2464	245	181	149	273	818	216	116	537	529	220	655	74	35718
	'34	244	28	226	1872	65	4293	317	68	1611	344	334	2383	289	131	93	206	616	180	159	279	530	179	642	68	28621
	'33	99	20	88	1214	21	3027	130	40	823	145	186	1297	163	65	29	79	272	99	72	146	306	84	344	34	16347
	'32	106	23	90	1101	32	2912	107	24	703	127	178	1234	134	66	30	76	235	66	101	135	339	76	356	41	15326
	Before '32	1301	143	332	2370	165	5858	381	309	2509	610	1092	3672	317	208	417	259	979	245	309	345	1725	280	1945	166	57294
	Unid.*	11	3	5	90	58	209	3	2	352	34	4	503	42	32	51	76	109	2	2	13	7	7	21	4	14287
	Total	14630	2882	7166	91731	6095	222447	27576	4869	127218	22060	25129	138450	12832	12755	8654	21204	72921	9207	5634	29163	37190	14506	43955	4519	1983602
CADILLAC	6 Mos. '48	125	54	56	786	76	3193	258	19	971	190	162	1348	108	99	53	227	561	51	38	215	158	98	374	20	22891
	'47	243	186	134	2561	136	7477	655	72	3059	533	436	3593	331	309	65	577	1704	174	94	560	641	194	1205	78	53232
	'46	99	101	71	1204	67	3680	310	24	1436	262	214	1648	186	162	28	294	908	87	45	278	334	182	332	37	25245
	'45-'42	49	62	25	698	40	1820	212	10	774	81	148	824	91	84	11	158	571	44	15	73	207	63	170	8	13281
	'41	175	194	147	2895	176	7151	673	34	3270	556	507	3345	417	327	55	661	1938	213	94	687	845	319	678	56	57973
	'40	26	29	58	676	32	1797	108	5	679	150	86	791	114	40	8	104	481	45	13	174	137	69	181	11	13515
	'39	26	35	41	711	35	1624	95	5	757	103	106	775	122	51	9	100	318	46	18	129	149	48	170	7	11584
	'38	19	11	30	508	15	1117	72	6	409	90	71	467	68	34	4	53	218	37	9	79	103	32	87	10	7886
	'37	25	28	47	704	22	1648	97	9	663	75	91	672	94	50	8	76	245	30	20	108	162	61	147	13	10720
	'36	26	25	27	525	29	1121	63	3	538	63	89	490	71	27	16	56	173	22	22	74	143	50	103	11	8025
	'35	7	6	8	103	3	270	8	2	98	16	21	123	21	7		13	45	11	4	17	32	11	26	3	2219
	'34	8	4	2	98	5	231	22	2	86	13	32	119	14	5	2	10	51	5	3	9	31	4	24	2	1747
	'33	3	1	2	69	1	167	10	1	51	2	14	42	10	2	2	5	23	4	1	2	10	6	11		963
	'32	3	1		70	4	175	5	1	43	9	11	82	5	1	1	9	16	1	5	9	22	11	9		1961
	Before '32	22	15	26	303	16	584	32	18	166	36	91	322	34	12	9	20	79	34	24	27	83	22	45	10	4723
	Unid.*	2			16	10	52	1		37	2		126	3	5	2	15	32				1		5		1501
	Total	860	752	674	11907	667	32107	2621	211	13097	2181	2079	14967	1667	1215	273	2378	7343	804	414	2441	3058	1140	3563	266	236516
CHEVROLET	6 Mos. '48	3236	289	822	8126	1141	24370	5673	1037	17118	5192	3221	18030	1270	3129	1956	5689	20978	1073	536	6277	2922	2055	7374	724	320032
	'47	8142	633	1947	17764	2686	45292	13725	3493	41733	12101	7851	40805	3121	8163	4277	11743	45027	2531	1342	12735	10216	4406	21659	1724	660064
	'46	4817	414	1188	11292	1680	29048	9450	2254	24448	6747	5001	24302	2057	5412	2555	7206	30035	1528	845	7865	6728	3983	7536	1096	396750
	'45-'42	3176	317	425	5750	1334	13589	6436	1431	14342	3578	3229	12090	1074	3774	1463	5056	22109	1139	433	2712	4324	2470	4413	699	228370
	'41	13177	1115	2750	27252	4803	59031	24920	5820	63399	16282	14025	54810	4913	14425	6070	19672	74815	4660	1982	18546	19780	9682	20882	2542	977535
	'40	9510	792	2450	23087	3166	49163	17931	4317	47532	13409	9736	44753	4055	10308	4435	13607	49069	3873	1763	15427	13884	8232	17084	1853	756216
	'39	8250	601	2078	16522	2501	35322	15460	3094	30621	10467	7497	31814	3127	8275	3868	10523	33833	2683	1256	11485	10257	6063	13618	1559	552880
	'38	7053	503	1637	13670	2003	29013	10915	2958	21756	9120	5762	24829	2142	5075	3182	7257	31296	2219	1127	8495	7704	4806	12209	1179	440096
	'37	9998	723	2818	22546	2817	49506	18077	3739	49327	11837	10865	47807	4278	8366	4713	11648	40982	4151	1939	14111	15260	9247	21055	1764	733420
	'36	11788	686	2805	21312	2914	50977	15170	3661	49382	13754	11569	43256	4169	7932	5080	12036	41687	4153	1925	13536	15676	9914	23813	2014	754606
	'35	5938	385	1852	10940	1455	25647	9536	2544	21927	8055	5094	19812	2454	4825	2749	6726	19764	2119	1095	8265	7348	4096	11814	1075	386842
	'34	4239	267	1495	8598	1147	20350	7046	1779	15391	5038	4048	15680	1716	3435	1990	4221	16661	1633	720	4634	5914	2833	9077	712	275957
	'33	3171	176	1102	6208	644	15515	4160	1147	9446	3692	2700	10619	1324	2771	1259	2803	11082	918	538	2837	3998	1987	5263	473	187602
	'32	1608	119	645	3965	323	10529	1652	726	5631	1836	1539	6810	750	1044	726	1597	5449	479	477	1869	1902	1117	3861	286	109331
	Before '32	10598	497	1273	5727	1287	17508	4218	3359	15533	5788	6184	13091	933	3323	4385	5031	17374	1636	998	4789	7631	3011	13405	995	336109
	Unid.*	88	8	19	136	279	340	46	28	1026	181	6	1566	110	185	220	419	797	40	8	61	31	36	118	14	54950
	Total	104998	7532	25306	202889	29980	475210	164415	41389	428612	127077	98127	409934	37491	90542	48928	125238	459951	34835	17004	133624	133509	73738	193276	18759	7170760
CHRYSLER	Mos. '48	535	104	119	1245	238	4211	593	206	1981	614	459	3208	181	237	253	591	1443	166	107	694	522	392	1405	130	43249
	'47	1212	221	250	4013	366	9137	1192	474	5762	1207	1216	7710	483	589	403	1152	3533	482	192	1589	1516	911	3092	265	94810
	'5	631	156	200	2651	240	7544	876	234	4675	733	902	6031	399	436	251	776	2210	315	158	1131	1185	783	1267	181	69383
	'45-'42	264	112	51	1273	153	3250	502	86	2164	406	450	2267	171	243	73	308	1858	175	49	254	574	298	526	73	20668
	'41	915	335	281	6170	548	14416	2273	302	10485	1470	2476	12270	811	945	330	1632	4048	624	244	2170	3271	1421	2397	372	144399
	'40	570	156	219	3685	282	8609	1321	203	6092	863	1296	7799	619	523	183	875	1976	349	176	1378	1600	899	1376	221	84757
	'39	475	94	153	2912	212	6665	913	113	4292	608	984	5671	388	367	141	593	1332	260	144	864	1135	591	1150	143	60724
	'38	360	82	122	2225	127	5102	586	88	2721	378	640	3892	195	214	128	497	1054	180	107	599	805	424	787	111	41156
	'37	527	136	260	3773	233	9045	1091	168	7064	663	1230	6658	390	243	215	715	1416	401	189	945	1822	1075	1740	184	80245
	'36	333	79	133	1739	115	4563	431	115	2902	416	692	4098	296	170	137	404	756	223	137	560	947	493	786	97	40679
	'35	197	29	66	988	62	2456	299	78	1528	248	403	2200	93	93	81	179	410	117	102	272	572	253	550	47	22100
	'34	85	17	54	489	41	1407	141	34	816	117	734	1455	98	77	26	118	280	80	51	147	383	186	253	24	12607
	'33	49	9	35	443	36	1331	81	10	552	85	152	940	62	45	10	63	172	36	33	125	239	99	192	9	8897
	'32	47	10	37	357	25	986	79	11	399	69	135	851	72	33	24	56	108	16	34	75	175	97	150	13	7081
	Before '32	551	70	153	1033	79	2865	226	230	1453	256	729	2327	151	99	227	143	446	125	146	280	1127	252	967	100	29162
	Unid.*	14	1	3	37	18	92	2	3	114	12	12	277	10	9	4	36	41	1	5	8	25	1	25	1	6083
	Total	6765	1590	2136	33033	2775	81659	10316	2355	53020	8145	12499	69861	4804	4450	2514	8138	21082	3567	1870	11128	15859	7875	18633	1971	776300
CROSLEY	6 Mos. '48	62		62	447	77	992	131	6	988	96	238	676	33	78	22	297	384	84	53	253	45	132	196	14	12981
	'47	101	20	55	1006	38	1404	334	21	1457	111	244	764	50	216	29	547	329	32	33	634	190	217	200	27	17277
	'46	7	1	8	42	6	119	61	6	59	45	6	195	10	56	11	102	18		9	119	74	41	17	2	2009
	'45-'42	12		2	61	1	116	16		64	6	34	92	15	37	1	12	21		3	69	5	12	5	2	1056
	'41	1		4	43	1	163	16	2	103	7	15	89	12	10		30	11		2	55	15	20	6		1154
	'40	4		1	9		37	2		15	4	6	2	3	1	1	10	8		1	9	8	9	1		301
	'39	6	1	1	22	2	57	7	1	42	5	6	8	4			4	22	2		20	2	7	12	1	580
	'38				1				1	2			2			2	4	9		1	1					53
	'37	1			3		5	9		3			2				2	3			1	1				92
	'36	1					1	9										2								38
	'35	1					4	2									1	1		1	1					15
	'34						2	1												1	1					5
	'33													2									1			6
	'32	1												1												9
	Before '32	2					1							1			1	1			1					9
	Unid.*						4							1												30
	Total				7		7	2		68	3		31	2		1	10	2			2					413
		188	22	133	1641	125	2912	589	39	2828	277	543	1863	133	402	67	1020	811	118	102	1166	341	438	437	46	36000
DE SOTO	6 Mos. '48	205	72	91	868	112	4730	429	113	1501	310	374	2511	160	189	149	350	897	153	62	535	438	218	1092	134	33961
	'47	455	139	222	2467	177	10657	864	201	4949	696	1058	6088	338	456	238	700	2242	298	149	1068	1425	351	2648	155	73291
	'46	381	105	193	1922	156	7865	817	165	3990	572	827	4758	256	371	183	575	1736	321	141	925	1164	501	1187	149	53898
	'45-'42	115	56	53	702	90	1952	334	73	1627	234	338	1697	93	217	57	286	957	158	42	226	542	170	370	49	21116
	'41	941	193	224	3556	249	8745	1077	219	7125	776	1692	6991	423	533	198	912	2372	582	188	1361	2725	758	1923	196	91025
	'40	305	100	248	2685	139	7350	669	135	5231	572	1036	5874	356	325	173	653	1499	383	137	1020	1412	578	1390	134	63701
	'39	268	76	185	2235	101	6122	496	110	4113	400	800	4279	261	260	132	523	1179	326	110	766	1186	426	1030	103	49534
	'38	192	29	138	1526	88	3697	316	71	2516	303	491	2883	119	138	81	369	844	200	89	497	753	344	674	68	32915
	'37	394	119	203	3035	140	6917	573	133	6404	599	1122	6171	460	242	178	617	1137	448	149	816	1703	702	1563	108	66622
	'36	164	51	75	1260	61	2954	218	46	2327	271	652	2676	224	88	92	237	488	268	100	398	1010	411	784	76	30993
	'35	135	27	43	639	30	1598	159	44	1137	150	297	1191	124	45	92	128	281	145	54	173	509	170	407	35	15923
	'34	41	17	24	159	14	415	38	16	294	51	132	327	24	15	16	50	121	44	13	42	224	39	99	11	4699
	'33	33	5	29	280	11	882	39	16	549	46	162	457	73	14	13	40	71	38	16	59	263	64	179	10	7003
	'32	20	7	30	248	9	729	37	7	588	50	175	604	47	27	26	66	77	16	12	56	182	68	131	8	6221
	Before '32	163	32	75	422	22	1136	80	52	888	87	405	926	74	65	68	86	316	78	52	167	652	108	462	27	13914
	Unid.*	3		1	18	22	77			110	5		203	8	4	10	23	22	7		4	3	1	17		4088
	Total	3315	1038	1832	22022	1421	66826	6146	1401	43350	5122	9581	47636	3040	2999	1706	5615	14239	3461	1314	8113	14191	4909	13556	1263	573304

Unid.*—Unidentified as to year of manufacture.

Data from the Reuben H. Donnelley Corp. are as of July 1, 1948.

CARS IN USE BY MAKES, STATES

Model	Ala.	Ariz.	Ark.	Calif.	Colo.	Conn.	Del.	D. C.	Fla.	Ga.	Idaho	Ill.	Ind.	Iowa	Kan.	Ky.	La.	Me.	Md.	Mass.	Mich.	Minn.	Miss.	Mo.	Mont.
DODGE																									
6 Mos. '48	782	319	631	7062	678	1338	192	783	1489	1220	303	6433	3296	1821	1126	927	1151	481	1630	2731	10390	1882	470	2027	379
'47	1791	788	1040	17304	1921	3418	460	2148	4178	3075	810	14994	6053	3548	2643	2329	2488	1219	3807	6853	12847	3977	1098	4888	970
'46	1343	609	884	12473	1356	2399	307	1063	3156	2264	636	10036	4064	2391	1798	1635	1609	835	2001	4837	8188	2792	903	3393	639
'45-'42	917	327	674	4741	685	1034	115	507	1705	1101	290	3880	1751	992	920	758	1358	335	912	1947	3125	950	520	1250	228
'41	2624	1225	1322	22949	2371	3677	422	1654	5584	2971	910	12255	6296	3583	2866	2462	2934	1120	2487	7526	12190	3540	1189	4860	736
'40	2209	954	1078	19529	1760	2985	344	1131	3947	2535	733	10818	5361	3001	2296	2243	2198	927	2121	6313	9634	3198	1018	4629	636
'39	2118	825	1064	18404	1600	3043	307	1058	3414	2318	632	10489	4214	3126	2112	2065	2033	931	1526	6254	8254	3042	780	4583	550
'38	997	422	582	11388	896	1881	192	484	1750	1081	377	5729	2484	1740	1357	1359	1191	620	959	3483	3111	1604	457	2152	336
'37	2135	1185	1286	23943	2532	5342	536	994	3899	2514	994	16220	7230	3643	3365	3748	1879	1420	1817	9079	11297	5011	879	5266	789
'36	1481	1167	1062	24910	2317	3916	459	752	2970	1813	935	13516	6243	3291	2683	3015	1653	1122	1829	6980	8787	3981	661	4492	883
'35	589	571	523	15859	1155	1874	192	265	1318	768	570	5719	3822	2483	1553	1709	679	540	827	3029	3175	2298	313	2398	815
'34	315	219	225	8134	433	918	115	104	766	400	224	2136	1150	817	661	807	337	321	293	1696	1216	808	203	1062	217
'33	123	161	165	5660	404	781	77	74	465	206	136	1759	1035	560	518	637	201	238	194	995	1021	618	88	1116	148
'32	48	39	51	1897	98	160	38	19	128	83	24	382	229	234	155	188	103	74	63	219	235	196	36	275	29
Before'32	264	312	300	8864	1051	929	77	45	475	292	427	2547	1615	2414	1615	940	352	466	339	816	1612	2021	202	1794	364
Unid.*	29	18	12	806	25	68		677	97	190	34	347	45	32	82	12	186	1	6404	19	4729	55	42	452	3
Total	17717	9130	10917	204023	19482	33749	3833	11636	35351	22833	8029	117020	54888	33481	25750	24712	20450	10660	26609	62778	99811	36153	8829	44147	7390
FORD																									
6 Mos. '48	3199	880	2372	11181	1928	2486	495	1396	4791	5521	954	16215	8263	6037	3893	3535	4166	1020	2530	5153	34883	5239	2322	5780	975
'47	6012	1914	3785	41166	3881	3670	866	2623	9102	9758	1808	25495	11599	8638	6662	5693	7715	1863	6898	10190	29286	8069	4660	11039	1588
'46	6931	1836	5138	25219	4282	4237	863	2282	9519	11703	1634	24707	10547	10056	7282	6235	8682	2005	3542	11076	27694	10583	6163	10535	1877
'45-'42	2729	688	2217	8668	1540	1318	247	580	4328	4826	620	7241	3553	3829	2784	2415	3557	662	1623	3137	8194	3599	2649	3217	648
'41	12349	3026	6190	51092	6779	6741	1113	2343	15268	16018	2619	30486	17221	16416	12884	8821	13685	2866	4083	14698	42084	16599	10133	15066	2848
'40	9081	2264	5949	43069	5440	5600	968	1608	11252	16361	2183	23803	14117	14206	9531	7000	9806	2688	3431	12419	29877	13118	7003	12083	2291
'39	7170	1832	4924	35673	4849	4298	743	1260	8501	11727	1816	20218	10664	12749	7793	6219	8053	2185	3075	10154	21942	11093	5332	9954	1834
'38	4179	1423	3202	27918	3700	3588	618	817	6150	6557	1387	15479	8089	10414	6610	4380	5131	1949	1975	8436	12311	10586	3147	7596	1507
'37	8623	3048	6395	47804	7644	8729	1731	1175	12128	13107	3276	35559	23213	18335	13570	11347	8305	3855	3769	19173	42849	22489	6142	16704	3958
'36	9434	3050	7502	55288	7505	7789	1380	1108	11274	15475	3181	28500	18518	16284	12131	10307	7831	3641	2702	16865	32480	17650	6176	14883	3257
'35	4855	2188	5056	48909	5381	5673	885	593	6764	8188	2344	21117	15335	15134	10348	7929	4082	2719	2247	11274	19728	16243	3752	12799	2597
'34	3309	1512	3307	25033	3538	3265	495	269	4349	6860	1413	9347	6505	6280	4772	3940	1777	1636	936	6760	10034	7385	2709	6196	1274
'33	888	533	816	11254	1093	1075	123	92	1469	1240	533	3073	2452	2508	2056	1563	730	563	376	1725	3003	3401	610	2405	535
'32	717	427	842	12211	988	901	248	76	1505	1189	350	3281	2290	2079	1952	1580	981	561	385	1636	3732	2676	552	2334	370
Before'32	15078	5708	17330	110632	12571	8139	1607	436	16214	22095	5853	43689	31262	42407	31596	22473	11526	5540	3021	9307	34025	45935	10801	34816	5184
Unid.*	107	62	190	2021	127	127		1249	629	1431	85	1173	135	91	345	96	922	7	16030	46	18905	193	318	3636	11
Total	94446	33092	77305	557238	71326	67616	12384	17868	123263	155158	30058	309343	184766	185390	135099	104365	98194	33901	56823	142147	371007	194908	72289	170309	29744
FRAZER																									
6 Mos. '48	370	115	238	1533	368	213	44	113	517	359	267	3924	1814	1573	895	378	540	51	317	386	3188	943	263	800	249
'47	648	270	349	5132	536	652	89	267	1208	754	485	5040	1815	1265	1303	705	756	284	499	1060	4055	1058	337	1100	394
'46	20		22	127	3			2	23	15	4	23	23	47	5	9	12	2	21	20	32	3	16	9	1
'45-'42																									
'41																									
'40																									
'39																									
'38																									
'37																									
'36																									
'35																									
'34																									
'33																									
'32																									
Before'32																									
Unid.*	13	4	3	240	21	106	4	5	56	17	3	134	69	14	10	15	14	4	89	75	78	3	8	46	
Total	1051	399	612	7032	928	973	137	387	1803	1145	759	9121	3521	2899	2213	1107	1352	341	926	1521	7331	2005	624	1955	644
GRAHAM-GP																									
6 Mos. '48																									
'47																									
'46																									
'45-'42																									
'41	3	5	3	185	9	8		2	22	2	4	99	30	4	2	7	3	5	17	22	39	5		10	2
'40	4	3	2	318	15	17	1	2	34	2	4	77	43	19	9	5	2	18	13	68	47	22	2	20	7
'39	17	24	4	514	34	109	3	10	91	12	12	214	94	58	37	15	13	38	13	158	198	63	3	88	7
'38	14	18	1	637	22	47	3	5	87	13	23	178	70	53	33	25	12	26	23	115	119	74	1	58	2
'37	23	73	38	1283	112	427	11	26	235	52	74	624	186	172	106	93	37	99	44	551	491	249	15	171	40
'36	26	58	15	1428	112	215	6	6	139	19	46	356	217	118	50	69	19	50	27	250	295	223	6	146	39
'35	10	42	11	999	63	163	8	11	114	15	38	275	137	95	63	60	12	54	22	158	181	161	5	107	35
'34	5	11	3	569	25	45	1	10	47	19	14	107	65	19	26	22	9	26	11	108	72	53	1	62	6
'33	1	8	4	309	37	29	1	4	29	6	9	84	44	10	16	9		14	18	42	36	56	2	33	7
'32	1	7	6	220	12	25	1	9	18	4	6	53	16	9	27	11	2	13	13	48	40	68	2	29	2
Before'32	15	40	18	1383	132	145	5	13	74	20	38	316	148	190	107	51	14	42	39	114	216	303	5	144	38
Unid.*	2	1	3	14	4	5		9	10	3	2	18	15	2	2		1		129	2	248	6	1	22	1
Total	121	290	110	7816	577	1235	38	107	899	167	270	2381	1070	748	478	367	124	385	369	1636	1960	1291	43	888	188
HUDSON																									
6 Mos. '48	686	187	407	4112	583	755	89	378	1091	963	264	4813	2345	1180	1023	705	896	349	996	1821	6550	1283	437	1258	230
'47	914	339	458	7776	569	1180	140	508	1622	1179	403	5814	2362	1431	1171	861	770	472	1194	2330	6092	1432	451	1796	398
'46	912	372	417	7475	829	1215	140	416	1740	1140	422	5626	2843	1520	1165	902	751	521	888	2504	5951	1408	420	1633	385
'45-'42	870	227	186	2950	451	447	50	171	968	598	332	2508	1323	842	720	430	346	310	207	981	2674	618	275	685	220
'41	1101	556	389	9429	747	1351	140	421	2072	997	436	6014	3235	1709	1201	752	645	604	539	2610	7044	1291	294	1469	352
'40	858	408	329	8260	758	1183	139	340	1830	863	427	6159	3313	1784	1049	753	722	527	572	2265	5465	1283	329	1447	370
'39	472	264	177	4487	566	613	76	204	1106	568	248	2946	1419	952	795	421	466	404	457	1494	2752	831	155	885	167
'38	357	165	127	3407	577	487	64	134	839	485	275	1981	1150	845	771	394	328	342	289	1251	1758	840	109	667	155
'37	902	252	257	5780	1241	1325	166	218	1795	999	567	6508	2928	1711	1841	877	573	698	616	2696	6233	1853	299	1459	434
'36	520	306	240	5156	988	979	113	165	1336	491	440	3515	2650	1608	1427	711	286	543	427	2422	3940	1824	196	1152	599
'35	196	194	107	3291	464	492	50	48	461	204	221	1372	1474	872	637	323	113	259	231	1025	1493	975	86	562	319
'34	98	115	75	1704	281	364	37	34	304	119	111	653	549	495	429	158	57	264	84	886	710	465	31	287	109
'33	39	31	14	691	101	166	12	14	110	44	22	277	193	152	203	54	31	109	49	383	351	138	7	125	27
'32	12	22	8	463	62	91	12	7	89	30	12	100	109	76	86	40	14	58	41	196	152	84	5	85	9
Before'32	74	96	41	2499	403	381	37	28	314	72	101	845	812	730	527	219	54	430	171	555	968	800	40	478	108
Unid.*	12	9	5	484	18	26		47	65	12	5	124	16	17	30	9	51	2	1941	2	2148	12	17	139	3
Total	7825	3711	3248	67943	8558	11065	1265	3276	15724	8697	4294	47555	26519	15924	13255	7509	6105	5892	8704	23424	54281	18117	3121	14127	3883
HUPMOBILE																									
6 Mos. '48																									
'47																									
'46																									
'45-'42																									
'41	2	3	1	28	9	3		5	19	4	1	3	21	5	2	7	1		1	4	29	1	1	1	
'40		1		34	1	7			4	1		1	4	2	1	1			5	3	3			2	
'39	2	4	3	66	10	16		9	14			99	21	6	3	7	4	1	5	35	90	48		6	3
'38	3	5	3	105	19	50		14	17	9		97	27	22	3	7	7	1	1	60	89	40		8	1
'37	1	4	1	30	2	1			5			39	9	3	1	6	1	1		1	17	3	1	2	1
'36		7	4	99	28	68	1	6	19	7	12	82	19	40	9	16	4	3	5	51	25	46	1	19	10
'35	5	16	6	442	33	103	3	14	40	17	16	141	72	60	44	22	12	15	16	122	88	124	4	45	24
'34	3	6	3	225	11	76	1	7	34	9	2	84	30	29	10	25	6	8	5	68	47	78	3	18	7
'33	4	4	1	152	5	41	1	5	16	5	1	43	28	11	4	21	5	5	7	53	14	63	1	29	3
'32	8	8	5	141	13	28	2	10	20	9	2	58	24	13	14	9	8	7	10	53	61	58	4	38	
Before'32	14	31	18	1452	82	234	6	19	129	43	25	467	160	272	149	98	22	53	83	217	220	405	18	187	32
Unid.*			8	21	4	5		6	2	3	2	13	25	2	1		3		78	2	71	2		51	
Total	42	85	51	2815	208	632	14	94	319	107	61	1107	440	467	241	219	70	94	216	589	712	868	33	394	81

Unid.*—Unidentified as to year of manufacture.

Data from the Reuben H. Donnelley Corp. are as of July 1, 1948.

AND YEAR OF MANUFACTURE—*continued*

Model	Nab.	Nav.	N. H.	N. J.	N. M.	N. Y.	N. C.	N. D.	Ohio	Okla.	Ore.	Pa.	R. I.	S. C.	S. D.	Tenn.	Tex.	Utah	Vt.	Va.	Wash.	W. Va.	Wis.	Wyo.	Totals
DODGE Mos. '48	670	123	316	2677	308	11286	1385	228	4590	980	849	6535	430	604	599	1143	3817	331	255	1347	1021	722	2657	188	91789
'47	1553	272	712	6722	615	24451	3435	562	14404	2288	2238	17450	1067	1574	980	2803	10200	890	499	3525	3238	1349	6328	455	213721
'46	1075	201	502	5845	517	16773	2442	480	9635	1626	1659	12135	841	1151	631	1943	6894	600	380	2525	2508	1471	3048	310	146803
'45-'42	485	104	168	2180	247	5190	1258	287	4177	820	1111	3962	258	648	274	1200	4239	364	142	715	1561	647	973	157	61977
'41	1488	298	632	9852	623	20580	3713	590	16366	2857	3479	15783	1217	1782	791	3502	11778	953	445	4313	5309	2070	4133	507	221273
'40	1330	221	595	7344	569	16782	3002	497	13446	2170	2395	13377	980	1342	670	2763	8734	948	409	3439	3811	1921	3781	386	182490
'39	1256	187	616	7220	524	17568	2720	430	11549	2019	2090	11282	1108	1307	651	2446	7312	772	396	2838	3506	1431	3594	390	168158
'38	1027	179	372	4910	314	11236	1473	232	6194	1288	1141	7316	565	655	390	1419	4285	452	305	1684	1859	1020	2134	189	97310
'37	1619	306	908	11575	667	25943	2905	567	18441	2515	3400	20644	1663	1498	800	3478	7349	1206	650	3158	5008	2603	6697	512	241088
'36	1685	213	716	8996	506	20905	2097	463	15428	2263	3260	16273	1313	1039	711	2595	4855	1271	503	2910	4685	2303	5508	476	201508
'35	1904	172	405	3929	236	10025	1038	336	6854	1463	1595	7208	731	559	445	1186	2384	671	258	1499	2769	1124	3007	265	101934
'34	355	67	195	1916	120	4934	497	118	3105	628	795	3587	332	249	155	581	1322	310	151	531	1372	682	1132	89	46839
'33	262	42	127	1567	70	4347	361	85	2749	455	643	2701	178	162	86	283	652	165	73	425	1086	445	988	82	35356
'32	59	8	54	355	20	1144	118	13	487	121	141	824	52	44	33	137	251	34	36	111	185	117	175	19	9396
Before '32	1262	120	222	1120	188	3553	449	394	2815	916	1406	2840	234	192	552	575	1554	297	226	1684	1859	1020	2134	189	53901
Unid.*	24	1	5	58	55	169	7	5	01	42	9	587	25	26	40	115	134	5		11	9	10	29	6	15918
Total	14725	2474	6515	77036	5798	194524	26870	5255	130470	22109	26168	142504	10394	12813	7805	26131	75538	9271	4708	29621	39629	18477	48037	4207	1889420
FORD 6 Mos. '48	3038	262	505	4879	1107	18837	6314	1081	13189	2953	2705	12190	801	2770	1498	4544	18001	959	468	3798	3867	1743	5520	443	246484
'47	5191	483	1171	9744	1578	27749	9929	2242	22971	6319	4507	21807	1342	6032	2392	6989	30191	1688	774	11324	7388	2776	12680	1089	424338
'46	5451	405	1039	9593	1674	26128	12430	2689	21180	7080	4282	21355	1632	5932	2987	8228	33076	1573	705	9863	6429	3749	7854	1129	411506
'45-'42	2178	183	296	2889	857	6533	4873	1182	7295	3319	1423	6219	498	3034	1021	3879	16975	859	254	2180	2870	1128	2548	479	147627
'41	9512	733	1724	12833	3170	29385	22877	5333	36763	14894	7067	27250	2487	12785	4554	13162	58795	3368	1151	13251	10532	5706	13293	1848	648324
'40	8183	569	1612	10032	2200	24709	17805	3593	27688	11919	5561	23645	2249	10816	3800	10244	43443	2332	1112	11225	8055	4420	9834	1374	510512
'39	7080	438	1414	7879	1743	19369	13650	2775	22030	10469	4347	16589	1984	8495	3283	8285	32575	2071	905	9303	6314	3628	9117	1140	409988
'38	5722	333	980	7034	1287	18311	9234	2494	14757	8088	3578	13822	1470	5443	2692	4892	25790	1661	780	6832	4343	2611	8247	886	309192
'37	10331	639	2394	19234	2268	47633	16353	4103	40824	13220	8536	37693	3455	9952	5592	10917	37747	3299	1582	11548	12475	7467	19641	1729	678000
'36	9348	694	2339	12791	2339	42581	19189	3439	39839	13225	9191	33943	2785	12239	4841	10944	36892	3737	1582	9773	14142	6990	16063	1725	617502
'35	8023	541	1820	9735	1525	30590	11050	3547	24384	10980	6097	20384	1859	7319	3947	8388	22359	2498	1218	8565	9388	4825	14093	1228	448798
'34	4131	343	1249	4902	1047	16131	6739	1543	12389	6174	3518	11827	1032	5545	1761	4620	16127	1449	757	4161	5245	2948	6017	678	248711
'33	1551	110	467	1700	334	6438	1832	730	4217	2185	1572	3561	303	1459	644	999	4730	484	245	1498	2284	986	2391	273	84876
'32	1383	114	402	1681	351	5087	1543	559	7226	1538	1306	4710	330	908	601	1139	3890	354	314	1291	1821	972	2057	221	83701
Before '32	28442	1374	3181	13917	4488	39757	28337	12373	44076	24386	18590	32974	2523	25181	12395	19052	50973	4541	2435	15696	24343	12187	29499	2573	995899
Unid.*	95	9	18	99	139	433	232	28	250	182	16	715	66	221	211	452	645	61	7	60	21	33	88	13	52067
Total	109311	7205	20590	125893	28132	381184	179580	47395	348927	133881	82236	284779	24962	119121	51505	115344	432009	30454	14270	118939	119526	61871	156892	16818	6318273
FRAZER 6 Mos. '48	479	72	57	733	207	2137	553	164	1539	343	502	1435	68	121	245	298	924	147	83	495	299	257	998	116	31589
'47	733	128	110	1874	274	4594	1133	370	3231	691	1001	3052	221	402	385	580	1609	244	121	1190	1100	330	2032	235	55637
'46		3	12	1		35	6	1	10	30	1	1	1	1	7	13	52	2		43	1		12	5	676
'45-'42																									
'41																									
'40																									
'39																									
'38																									
'37																									
'36																									
'35																									
'34																									
'33																									
'32																									
Before '32																									
Unid.*	7	3	7	45	5	185	2	2	143	17		144	20	16	3	12	126	7	8	2	4		18	2	1808
Total	1219	204	185	2703	486	7051	1694	537	5302	1081	1504	4632	310	540	640	883	2711	400	212	1730	1404	587	3058	358	89908
GRAHAM 6 Mos. '48																									
'47																									
'46																									
'45-'42																									
'41	4	6		26	5	21	4		92	1	43	60	2	2		4	15	5		5	48	6	14	3	854
'40	15	5	4	22	4	82	4	1	139	7	33	101	6	1	1	5	10	6	2	21	34	22	31	7	1294
'39	20	7	8	140	2	318	6	2	372	24	107	309	12	6	7	17	41	22	2	38	81	50	102	6	3524
'38	20	7	9	98	3	292	5	6	275	12	107	189	10	6	13	14	28	35	3	27	104	31	77	7	2947
'37	39	35	60	452	10	863	37	7	1199	57	395	1016	53	22	21	63	73	116	20	69	409	171	301	21	10780
'36	39	19	31	216	7	537	28	18	608	64	310	561	33	13	17	34	48	118	15	67	339	111	211	21	7457
'35	30	12	23	205	3	577	35	10	543	36	301	511	20	9	12	37	38	66	11	57	229	66	148	10	5788
'34	25	6	23	61	3	247	9	2	225	21	121	194	8	7	3	29	13	34	12	33	99	24	66	2	2817
'33	11	1	11	81	1	250	6	1	116	12	59	164	7	1	3	5	14	19	13	16	70	12	35	1	1701
'32	6	1	11	42		151	6	2	88	4	38	140	3	2	7	16	8	16	6	19	30	17	34	3	1278
Before '32	95	21	29	274	8	577	23	26	385	39	231	473	22	13	41	37	48	63	45	45	218	92	291	15	6899
Unid.*	2	1		8	2	37	3	2	13	1	1	9	1	3	1	3	12	7			10		19		621
Total	335	122	209	1624	48	3922	165	77	4030	280	1744	3727	177	85	126	264	350	501	129	397	1682	602	1329	96	45520
HUDSON Mos. '48	595	86	182	1943	211	5638	1114	154	3912	698	541	3798	322	505	223	1104	2374	232	147	1005	631	387	1522	107	60718
'47	573	63	238	2511	245	6832	1249	188	4918	849	894	5594	390	777	248	992	2977	334	189	1458	1600	626	2613	207	78043
'46	536	107	281	2141	228	6385	1327	205	5124	789	1006	5450	430	824	256	907	2567	351	173	1309	1615	746	1755	174	76112
'45-'42	369	53	97	893	112	2054	815	63	2254	397	498	1738	135	535	83	467	1396	373	69	383	877	327	781	121	34048
'41	470	110	307	2873	215	5055	1320	121	6175	639	1282	5281	448	953	173	842	2481	481	212	1172	2435	808	2227	226	81467
'40	438	78	317	2272	233	4998	1294	170	6254	678	929	5543	390	843	164	778	2152	372	214	1026	1625	807	2026	212	75230
'39	280	49	261	1311	124	3422	821	84	2953	531	524	2828	263	517	126	402	1121	269	137	686	955	385	1055	99	42138
'38	287	37	191	1220	103	2980	544	106	2250	428	648	2489	158	344	125	366	1098	217	120	426	1051	344	894	117	34326
'37	573	93	357	2643	199	6734	1086	208	7312	891	1437	6427	397	658	221	808	1492	516	300	908	2635	875	2117	235	79698
'36	526	90	311	1685	158	5077	603	178	5315	678	1418	4097	370	348	242	549	1163	436	236	660	2444	722	1880	202	61393
'35	282	35	183	718	76	2485	318	83	2323	382	686	1606	164	168	171	263	481	188	135	379	1167	283	977	115	29317
'34	217	23	149	506	31	1704	229	41	1142	201	345	1134	110	102	92	127	288	117	94	203	578	184	512	67	16583
'33	58	8	72	264	12	815	101	12	469	35	440	436	53	32	18	38	87	30	55	73	219	79	194	17	5308
'32	24	3	37	147		552	31	10	283	22	234	302	26	12	10	23	58	24	36	25	72	39	131	14	3938
Before '32	213	27	162	735	37	2172	155	78	1409	133	421	1309	100	54	104	127	285	134	161	144	566	178	943	48	20474
Unid.*	10	4	5	17	29	62	3	2	176	10	2	256	14	17	13	23	35	2	1	7	9	4	21		6087
Total	5451	868	3190	21879	2002	56728	11000	1711	52253	7357	11271	48318	3768	6688	2285	7816	19971	4078	2259	9825	18479	6801	19818	1951	706485
HUPMOBILE 6 Mos. '48																									
'47																									
'46																									
'45-'42																									
'41	2		1	2	1	9	1		40	1	6	7		2		5	3			4	9		4		245
'40						6			2			2	1	1		2				3	7		3		98
'39	1	1	2	16	1	113		4	27	5	26	11	5		1	8	4	5	1	4	23	4	14	3	754
'38	1		7	40		100	2		44	9	31	31	8		2	14	7	6	1	13	48	7	14	1	952
'37	3			1		7	1	1	13	1	3	7	2			3	4			2	14		2		198
'36	23	1	8	64	1	193	1		81	11	23	110	10	4	4	11	15		3	7	38	6	15	2	1093
'35	46	3	13	186	1	267	12	4	158	16	50	250	41	8	7	22	23	11	4	31	78	32	80	6	2731
'34	16	1	11	56	1	192	10	1	142	24	18	128	21	13	6	7	9	7	5	19	20	15	54		1582
'33	5		6	65		210	4	1	68	2	19	132	19	4	2	7	6	3	3	12	18	8	12	1	1113
'32	9		6	66		208	5	2	85	3	13	150	18	7	6	14	12	3	2	16	20	7	26	2	1279
Before '32	96	10	47	481	10	1017	36	18	562	59	167	769	57	28	36	47	57	21	51	124	300	62	182	13	8431
Unid.*	1	1				12	1	1	9	1	2	37	2	1	1	3	5	1		1	4		2		1113
Total	197	17	101	829	16	2247	73	29	1231	132	358	1634	186	69	96	141	148	57	70	236	575	139	411	28	19075

Unid.*—Unidentified as to year of manufacture. Data from the Reuben H. Donnelley Corp. are as of July 1, 1948.

CARS IN USE BY MAKES, STATES

Model	Ala.	Ariz.	Ark.	Calif.	Colo.	Conn.	Del.	D. C.	Fla.	Ga.	Idaho	Ill.	Ind.	Iowa	Kan.	Ky.	La.	Me.	Md.	Mass.	Mich.	Minn.	Miss.	Mo.	Mont.
KAISER																									
6 Mos. '48	685	170	514	2216	384	428	88	240	573	898	354	6619	2774	1852	1304	782	852	148	751	1087	6634	1611	424	1369	317
'47	770	301	482	6077	447	854	109	258	1349	1060	383	4748	1901	1638	1128	882	819	380	642	1515	4941	1156	519	1322	509
'46	27	9	47	386	4			3	48	14	8	41	21	4	4	17	26	7	34	23	24	2	31	8	11
'45-'42																									
'41																									
'40																									
'39																									
'38																									
'37																									
'36																									
'35																									
'34																									
'33																									
'32																									
Before '32																									
Unid.*	3	4	12	321	4	3	7	9	14	18	13	61	63	4	3	7	16		75	13	107	12	7	31	
Total	1485	481	1056	8020	819	1285	201	540	2284	1808	738	11458	4759	2898	2437	1668	1713	515	1502	2648	11606	2783	981	2730	837
LA SALLE																									
6 Mos. '48																									
'47																									
'46																									
'45-'42																									
'41																									
'40	104	109	54	2377	191	554	75	178	617	259	30	1639	446	145	114	178	120	139	142	927	883	304	53	395	39
'39	117	120	62	3069	182	523	65	168	624	245	32	1377	387	167	107	150	141	128	189	983	767	293	60	358	45
'38	65	75	39	2077	102	341	38	100	361	131	25	742	287	104	78	96	98	78	104	627	431	184	34	282	23
'37	156	135	98	3816	212	665	89	142	697	224	50	1521	566	190	180	260	148	147	180	1258	944	323	85	445	45
'36	41	58	32	1690	94	196	28	52	234	70	16	548	202	80	72	77	80	65	54	431	312	106	28	191	16
'35	13	31	16	1244	49	132	20	25	132	44	11	279	133	61	55	50	23	29	32	237	181	76	13	104	16
'34	7	13	7	432	26	43	7	6	86	18	6	96	45	18	20	26	9	15	16	121	58	22	5	44	7
'33	3	3	2	206	9	39	4	1	16	4	4	37	10	5	6	11	3	5	3	63	10	16	2	16	4
'32		3	2	189	11	27	3	1	15	4	1	37	17	2	4	4	24	5	7	41	21	10	2	12	2
Before '32	13	16	5	949	48	149	14	11	60	14	8	148	43	35	13	15	12	23	23	168	64	59	7	60	11
Unid.*	7	1	1	30	9	9		71	40	33	1	74	16	4	4	1	15	3	656	16	141	1	4	32	
Total	529	564	320	16059	936	2678	343	756	2682	1046	183	6494	2132	811	653	868	671	637	1406	4782	3812	1394	293	1919	210
LINCOLN																									
6 Mos. '48	127	69	153	1276	117	253	26	117	470	213	47	1068	317	179	158	111	186	47	182	436	1500	160	97	251	51
'47	174	99	129	2656	161	323	38	139	723	299	72	1551	417	204	213	115	266	83	336	882	1911	224	144	370	57
'46	94	60	72	1412	130	241	28	105	516	232	45	1048	296	171	164	127	249	54	128	476	797	206	87	339	41
'45-'42	70	32	28	685	60	82	13	38	268	94	19	390	104	58	74	44	152	18	73	182	313	101	52	114	19
'41	167	138	109	3000	214	357	44	154	791	288	62	1044	358	234	301	156	339	94	118	643	795	302	149	484	62
'40	153	163	93	3470	270	356	40	119	770	239	94	1066	323	232	273	170	291	83	93	598	857	299	140	420	75
'39	148	143	96	3281	239	252	31	95	637	267	92	875	314	170	213	185	267	81	61	543	805	280	133	311	82
'38	106	123	69	2811	171	177	26	63	446	189	82	625	274	175	170	128	150	67	55	390	653	252	68	283	56
'37	182	187	121	3213	270	303	40	78	659	269	100	891	436	299	241	210	189	132	85	677	974	440	119	324	131
'36	42	70	34	1778	125	107	18	22	233	47	58	351	201	141	119	73	71	30	39	294	339	165	16	139	66
'35		2	2	197	11	19	1	6	15	11		33	8	15	5	10	3	5	5	37	10	12	4	16	1
'34	4	4	5	115	6	13	3	2	24	8	1	36	7	2	7	12	5	4	2	38	17	12	2	8	2
'33	3	4	1	88	1	14	1	2	3	2		18	6	2	3	4		2	1	11	6	8	1	5	3
'32	2	4	2	123	4	11	1	2	13	2		26	8	5	6	5	7	2		19	19	19		5	3
Before '32	5	10	6	379	19	33	3	6	37	15	3	63	15	22	14	21	10	20		65	31	30	7	13	7
Unid.*	3	2	4	75	5	36	3	58	36	16	1	35	12	3	2	5	21	1	434	7	181	2	8	34	
Total	1280	1117	924	24539	1805	2577	315	1005	5639	2191	676	9118	3096	1912	1963	1376	2206	723	1612	5058	8308	2512	1027	3076	656
MERCURY																									
Mos. '48	671	213	549	3535	708	754	150	418	1537	1148	252	5587	2227	1150	981	979	1003	229	589	1766	9571	1184	523	1381	309
'47	797	460	560	11209	947	1174	195	354	2045	1360	399	5794	1878	1332	1153	682	988	372	1018	2949	6244	1519	593	1748	495
'46	862	392	634	7026	1045	1081	159	282	1694	1711	383	5235	1810	1391	994	814	1247	263	285	2157	4954	1668	723	1864	440
'45-'42	300	126	221	1560	264	225	38	64	678	663	141	1214	478	380	281	212	496	92	104	409	1423	453	273	467	110
'41	1348	581	740	10333	1153	1064	150	280	2342	1967	498	4297	1857	1470	1322	850	1544	294	333	1802	5675	1923	871	1982	458
'40	896	439	587	10048	1160	1039	132	261	1860	1531	425	4021	1754	1373	1131	755	1062	364	297	1946	5065	1775	557	1636	389
'39	616	290	413	7425	789	859	104	229	1366	1139	267	2966	1109	1198	887	504	749	311	247	1267	3764	1341	431	1120	275
'38																									
'37																									
'36																									
'35																									
'34																									
'33																									
'32																									
Before '32																									
Unid.*	33	22	19	942	47	72	10	88	85	129	31	221	256	40	34	26	79	7	820	37	786	15	41	198	5
Total	5523	2523	3713	52078	6133	6268	938	1986	11807	9648	2396	29335	11367	8334	6783	4832	7168	1932	3893	12333	37462	9978	4012	10394	2461
NASH																									
6 Mos. '48	602	304	465	3450	532	1366	114	440	1149	1014	295	5799	2417	1005	996	681	779	395	1070	2540	6525	1510	451	1479	344
'47	902	482	573	7735	798	1862	164	503	1848	1287	442	6847	2325	1305	1302	869	1050	471	1710	3508	5763	1955	671	2248	419
'46	797	444	610	6979	777	1595	145	399	1818	1131	387	6677	2129	1139	1134	818	1004	487	1166	3038	4996	1868	668	2085	386
'45-'42	312	150	162	2144	254	424	32	73	690	431	126	2771	905	481	478	236	293	187	286	790	1599	778	198	541	220
'41	415	397	371	7181	753	1293	114	227	1466	771	440	7057	2100	1230	1116	679	674	424	757	2205	4512	2184	340	1909	431
'40	401	288	269	4873	614	953	93	162	1059	543	271	5244	1644	984	705	521	479	336	386	1669	2519	1588	233	1673	347
'39	326	235	190	4399	450	713	61	128	833	388	204	3980	1154	756	514	389	275	304	409	1643	1707	1123	180	1408	292
'38	167	149	127	2693	331	546	41	92	555	235	122	2530	599	683	417	290	220	218	234	1295	1037	1144	132	868	192
'37	307	273	165	4776	679	1281	124	77	870	408	316	6153	1558	1273	775	594	401	481	393	2789	2532	1674	196	1198	433
'36	153	211	119	3508	569	744	61	64	482	239	186	2654	867	902	576	279	268	256	192	1522	954	980	108	678	368
'35	32	69	38	2802	169	259	20	18	132	50	52	815	385	204	110	112	94	87	130	482	262	276	40	315	119
'34	32	41	27	1056	131	277	20	10	142	43	33	494	169	205	166	89	97	135	75	640	184	239	36	285	81
'33	6	8	10	391	40	76		4	49	11	7	118	34	28	21	20	27	37	27	115	39	57	7	50	3
'32	10	18	11	446	56	137	12	10	76	26	5	197	53	98	48	37	42	62	27	211	80	125	14	122	25
Before '32	33	112	48	3100	320	371	32	17	172	52	102	956	397	689	475	139	107	234	151	409	392	736	57	493	139
nid.*	17	10	6	351	9	26		106	24	45	10	133	25	14	20	4	55	8	1426	11	811	18	19	132	1
Total	4532	3109	3193	55902	6882	11923	1033	2330	11145	6674	3008	52423	16461	10996	8853	5757	5865	4134	8349	22887	33912	16255	3351	15484	3800
OLDSM'BILE																									
6 Mos. '48	603	233	447	5637	505	1065	223	538	1004	1003	224	6196	3059	1158	1158	878	951	362	1263	3649	12792	1287	415	1668	335
'47	1330	528	938	14502	1297	3163	535	1301	3048	2307	652	13787	5209	2690	2395	1968	1858	842	2836	7894	14168	2869	819	4326	716
'46	753	385	586	8739	890	1883	312	750	2087	1424	439	8273	3179	1607	1480	1244	1107	567	1374	5054	7160	1766	549	2605	405
'45-'42	332	323	317	4547	612	1154	178	376	1422	867	243	4303	1795	823	862	731	825	458	846	2626	3474	1054	389	1376	177
'41	1922	1301	1200	25542	2328	4900	713	1575	5506	3041	946	17109	7380	3406	3431	2809	2666	1558	2373	11451	13166	4149	1242	5642	932
'40	1361	844	854	21189	1630	3542	580	871	3556	2209	686	11808	5340	2477	2476	2109	1703	1226	1678	8235	8654	2905	902	4364	674
'39	961	653	616	14283	1215	2582	355	467	2229	1507	465	7550	3021	1903	1848	1514	1185	841	1067	5953	4908	2098	555	2968	487
'38	626	417	386	10405	923	1762	223	282	1583	948	348	4620	2395	1285	1175	1006	798	626	670	3907	2946	1548	375	1755	329
'37	1139	846	671	19371	1920	3370	491	544	2976	1617	640	11658	5486	2548	2313	1920	1136	1144	1082	6658	8251	3070	571	3712	578
'36	764	706	621	17894	1606	3013	446	447	2445	1251	585	9657	4457	2507	2005	1775	976	1104	928	6529	6809	2816	387	3439	499
'35	382	371	348	12189	947	1498	223	198	1117	618	341	4771	2946	1767	1388	976	381	569	606	3160	3228	2037	197	1990	318
'34	144	175	150	3834	417	692	89	54	438	231	159	1913	970	646	563	434	148	236	218	1334	1284	776	54	930	156
'33	41	46	40	926	97	217	45	12	96	34	30	555	239	198	129	92	28	96	69	423	312	273	16	247	52
'32	22	25	11	519	44	105		14	59	25	19	211	127	93	68	41	23	68	36	206	175	157	10	118	19
Before '32	58	116	64	2446	351	357	45	36	226	72	121	1157	832	745	484	213	84	246	174	417	1003	987	43	638	101
Unid.*	17	19	11	682	25	57		415	80	142	17	295	31	15	80	5	109	5	5528	11	2207	15	24	293	5
Total	10655	6988	7260	162705	14807	29380	4458	7980	27975	17294	5912	103863	46446	23868	21857	17711	13956	9951	20746	67507	90521	27807	6548	36271	5783

Unid.*—Unidentified as to year of manufacture.

Data from the Reuben H. Donnelley Corp. are as of July 1, 1948.

AND YEAR OF MANUFACTURE—*continued*

Model	Neb.	Nev.	N.H.	N. J.	N.M.	N. Y.	N. C.	N. D.	Ohio	Okla.	Ore.	Pa.	R. I.	S. C.	S. D.	Tenn.	Tex.	Utah	Vt.	Va.	Wash.	W.Va.	Wis.	Wyo.	Totals
KAISER																									
6 Mos. '48	781	85	118	1800	354	4088	1044	199	3047	549	888	2942	181	349	571	702	1518	219	132	838	406	402	1505	159	55830
'47	727	122	199	1950	389	4782	1286	327	3613	778	661	3818	303	623	460	942	2084	261	170	1297	1103	363	2047	213	60807
'46	1	2	11	13	7	26	7	1	10	56	145	.....	3	15	15	31	37	4	....	99	3	3	2	4	1211
'45-'42	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....
'41	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....
'40	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....
'39	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....
'38	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....
'37	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....
'36	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....
'35	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....
'34	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....
'33	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....
'32	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....
Before '32	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....
Unid.*	6	....	1	10	15	100	7	1	201	6	1	220	5	6	16	12	156	4	1	5	2	1	6	3	1590
Total	1515	209	329	3773	785	8996	2348	528	6871	1389	1495	6980	492	993	1062	1567	3795	488	303	2149	1514	769	3560	279	119538
LA SALLE																									
6 Mos. '48	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....
'47	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....
'46	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....
'45-'42	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....
'41	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....
'40	50	58	83	1287	80	2889	209	16	1374	168	179	1523	145	83	35	214	490	76	48	205	291	147	292	31	20007
'39	58	49	70	1098	58	2672	242	16	1111	197	247	1245	158	88	37	225	448	57	46	230	291	142	246	24	19303
'38	40	25	52	747	28	1706	181	11	733	125	119	794	112	59	29	97	338	47	41	140	196	62	154	19	12355
'37	78	46	72	1479	50	3373	232	28	1552	196	269	1810	212	96	71	211	457	65	84	261	455	181	352	31	24237
'36	42	17	41	535	18	1119	82	6	517	78	116	571	82	24	33	66	206	38	29	86	158	50	123	8	8794
'35	19	11	25	256	8	613	41	4	289	51	67	369	38	14	20	33	72	21	17	45	95	39	81	8	5246
'34	15	7	5	138	6	288	13	....	129	17	20	136	10	8	15	7	37	17	10	33	64	30	38	5	2184
'33	....	1	4	89	2	181	3	....	69	4	10	85	15	2	1	3	9	3	6	6	12	3	16	....	966
'32	2	2	2	62	4	133	8	....	34	8	3	56	12	....	12	10	3	15	121	1	1	2	5	18	1	7	1	798
Before '32	14	9	19	212	8	437	21	6	119	19	41	245	27	11	7	11	32	17	23	19	42	13	37	5	3358
Unid.*	....	1	....	24	11	92	3	....	17	5	2	13	12	10	3	15	121	1	1	2	3	....	24	....	1529
Total	318	227	353	5927	251	13483	1013	87	5944	868	1073	6847	823	395	251	888	2217	343	307	1032	1625	668	1370	132	98797
LINCOLN																									
6 Mos. '48	79	40	25	716	59	1622	194	23	814	117	156	765	101	94	22	144	558	51	25	172	152	31	210	27	13808
'47	83	57	72	886	68	2390	206	23	980	237	211	1130	123	157	34	187	773	64	25	305	236	59	457	49	19267
'46	101	34	31	655	45	1543	168	27	733	181	139	825	95	108	32	184	577	55	26	204	200	68	179	35	13361
'45-'42	31	18	14	221	25	429	84	10	280	79	134	306	30	48	14	67	349	29	6	50	80	42	57	18	5482
'41	137	65	60	795	99	1801	338	37	940	278	317	1139	102	148	46	245	823	92	43	271	329	134	282	73	18977
'40	156	69	67	690	95	1698	306	35	960	299	288	1016	125	116	48	191	747	122	45	299	322	155	271	52	18857
'39	128	44	53	559	74	1443	266	40	799	297	315	856	86	100	54	236	626	102	36	303	347	110	245	57	16757
'38	125	43	32	459	59	1197	212	32	676	192	250	714	72	96	38	129	440	72	29	220	324	99	196	27	13322
'37	130	71	70	642	67	2009	262	68	1092	273	429	1150	106	135	75	213	570	127	43	247	558	157	377	57	19527
'36	53	23	33	277	42	821	92	25	403	135	195	479	37	41	25	45	238	78	15	89	279	57	161	32	8274
'35	....	3	....	38	1	97	5	3	34	11	8	41	8	6	1	5	29	2	....	13	9	6	5	....	752
'34	1	3	4	49	1	94	4	2	26	4	7	48	4	4	....	4	29	4	1	6	14	9	7	....	689
'33	....	1	1	22	1	61	3	1	17	2	7	18	2	1	....	2	4	2	1	4	9	4	6	....	358
'32	1	1	....	33	4	84	1	2	19	2	10	35	4	1	1	1	11	3	2	1	14	....	4	1	523
Before '32	5	....	6	76	3	189	10	3	65	6	27	73	11	4	4	8	40	6	5	9	49	10	12	3	1480
Unid.*	6	2	1	30	1	97	....	....	50	18	....	72	10	7	3	17	10	2	1	1	....	1	4	3	1331
Total	1046	474	469	6148	680	15575	2151	331	7871	2129	2491	8667	916	1066	398	1698	5824	813	303	2194	2922	941	2473	434	152725
MERCURY																									
6 Mos. '48	478	125	99	2229	344	5669	1231	191	4105	745	598	3919	315	575	409	953	3210	264	102	805	658	321	1419	140	66316
'47	731	230	249	2903	272	6844	1463	351	5109	1419	895	5050	338	859	386	1055	3906	382	101	1694	1204	380	2552	199	84063
'46	812	111	151	2572	369	5646	1817	431	4210	1202	751	3855	349	863	496	1208	3908	411	105	1290	1215	570	1423	202	73480
'45-'42	240	44	50	456	131	993	569	128	1041	417	221	774	78	361	141	342	1791	122	30	232	336	159	412	91	19781
'41	937	155	228	2294	534	4721	2289	469	4938	1648	1130	3576	350	1303	472	1390	5735	548	161	1420	1504	595	1666	277	83472
'40	855	115	248	1955	392	4785	1813	402	3961	1317	957	3201	357	1084	483	959	3606	461	155	1176	1313	490	1526	250	72311
'39	756	80	190	1459	236	3721	1397	309	3052	1056	745	2497	270	773	328	641	2325	247	129	983	778	412	985	200	53215
'38	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....
'37	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....
'36	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....
'35	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....
'34	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....
'33	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....
'32	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....
Before '32	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....
Unid.*	101	1	18	83	23	254	4	8	259	131	6	180	17	30	44	78	732	14	8	51	17	2	58	12	6154
Total	4908	861	1233	13941	2301	32633	10583	2289	26675	7935	5303	23052	2074	5848	2759	6626	25118	2447	791	7631	7026	2929	10041	1371	459372
NASH																									
6 Mos. '48	423	80	216	2250	259	6933	1016	209	4421	662	824	5775	511	479	283	943	2061	328	193	1024	1067	507	4115	153	70454
'47	524	86	377	3149	281	8938	1190	284	5952	1148	1104	7453	689	705	329	1155	2948	457	185	1832	1644	646	5957	197	94049
'46	591	66	308	2844	246	8508	1164	319	5825	953	1103	6792	600	576	364	1197	2803	437	177	1468	1728	848	2948	163	84713
'45-'42	241	50	61	740	115	1719	367	207	1771	298	606	1665	181	225	178	496	1034	169	58	205	871	229	1386	68	27401
'41	528	83	211	2772	253	5632	680	336	6306	690	1789	5504	528	302	371	1050	1899	372	129	669	2670	596	4440	180	77016
'40	351	75	176	2634	157	3793	462	186	4554	616	1126	4394	337	248	252	576	1484	289	111	448	1425	500	3176	139	54767
'39	302	47	179	1610	107	3343	365	160	2903	457	806	3167	355	174	195	458	779	192	108	332	1031	337	2486	97	42061
'38	242	48	132	1465	73	2968	131	165	2276	670	2203	4092	197	144	144	354	599	177	89	294	733	209	2180	79	30203
'37	434	117	319	2505	135	5306	323	187	4660	432	1268	6021	418	186	248	683	820	302	179	382	1594	478	6242	130	63185
'36	358	89	224	1124	80	3226	169	115	2118	300	963	2796	222	67	159	302	455	287	122	243	987	374	2354	98	34043
'35	133	28	88	372	22	1019	46	61	539	133	214	697	42	13	40	83	128	115	24	111	203	96	1292	18	12589
'34	85	18	100	478	13	1226	52	30	540	71	148	773	97	18	30	62	100	90	30	71	175	115	658	17	9684
'33	12	....	30	131	2	399	14	5	88	11	44	118	23	5	4	14	19	11	11	17	44	15	136	1	2337
'32	32	4	47	284	7	874	22	13	197	22	100	488	35	12	13	33	49	12	29	32	118	44	179	13	4605
Before '32	329	24	130	897	43	2037	62	141	825	114	336	1257	77	46	156	93	270	105	123	97	499	149	1297	43	18683
Unid.*	7	3	1	20	17	76	2	2	185	15	....	274	17	9	12	30	19	2	....	2	4	5	32	1	4019
Total	4592	818	2599	22475	1810	55997	6216	2388	42539	6202	11102	49377	4309	3149	2778	7529	15487	3345	1568	7187	14793	5148	38876	1377	629799
OLDSM'BILE																									
6 Mos. '48	501	84	270	2536	235	9093	1075	176	4148	855	757	5449	492	583	331	955	2557	241	198	1121	791	442	2268	116	81927
'47	1277	166	588	6565	478	20029	2647	460	11719	1913	1879	13838	1237	1413	622	1987	6357	664	425	2759	2893	935	6432	318	179677
'46	664	120	377	4391	310	12852	1688	300	8834	1126	1287	8415	844	821	362	1187	4210	427	268	1638	1943	897	2537	226	108319
'45-'42	380	74	187	2313	223	6367	1093	197	6217	626	846	4092	462	518	216	739	3100	373	131	570	1346	529	1441	137	80503
'41	1484	313	745	10457	915	25259	3926	582	17437	2867	3315	17382	2034	1879	774	3100	10160	1145	619	3588	5968	2082	8241	485	249225
'40	1020	208	769	8021	652	18407	2603	434	12509	2299	2259	13129	1600	1266	598	1935	6530	1026	545	2703	3889	1670	4353	344	180623
'39	822	149	652	5689	438	13018	1734	306	7707	1650	1552	9183	1149	703	472	1515	3979	635	414	1655	2677	1071	2893	271	121568
'38	589	116	429	4268	278	10101	1124	205	4982	1203	977	5781	741	398	238	1006	3180	445	275	1010	2037	735	2096	151	83899
'37	1144	199	742	7781	473	17625	1963	381	11537	2032	2129	12472	1616	715	470	1734	4934	822	420	1732	4279	1524	4991	369	165656
'36	1131	184	771	7594	352	17123	1383	304	11098	1666	2040	10777	1449	542	501	1161	3704	798	449	1472	3726	1531	4696	290	148406
'35	739	111	404	3612	219	8475	819	267	5389	1226	951	5163	621	333	348	600	1724	445	236	813	1899	757	2732	164	80573
'34	321	44	160	1440	78	4012	260	106	2317	423	453	2343	226	134	124	241	930	142	137	252	1068	358	1105	67	32682
'33	80	9	83	569	20	1532	62	30	523	81	103	657	69	26	48	38	150	49	48	86	286	95	360	21	9539
'32	41	7	32	285	7	828	38	17	239	33	65	326	39	18	17	25	130	9	47	35	151	28	130	9	4751
Before '32	404	26	112	785	42	2600	90	156	1616	202	412	1478	91	46	327	141	489	91	94	131	732	175	1110	74	22400
Unid.*	16	....	3	45	48	128	2	4	339	43	....	374	42	23	45	63	85	5	1	9	3	5	32	2	11410
Total	10613	1810	6322	66451	4769	167449	20404	3900	102611	18247	19005	111039	12732	9418	5493	16408	52090	7311	4307	19572	33678	12834	43417	3042	1540960

Unid.*—Unidentified as to year of manufacture. Data from the Reuben H. Donnelley Corp. are as of July 1, 1948.

CARS IN USE BY MAKES, STATES

Model	Ala.	Ariz.	Ark.	Calif.	Colo.	Conn.	Del.	D. C.	Fla.	Ga.	Idaho	Ill.	Ind.	Iowa	Kan.	Ky.	La.	Me.	Md.	Mass.	Mich.	Minn.	Miss.	Mo.	Mont.
PACKARD																									
6 Mos. '48	227	201	237	3208	336	892	107	451	794	633	137	3838	1560	815	543	454	497	281	549	1515	5705	751	180	855	199
'47	262	179	181	4891	311	818	93	469	801	593	132	3071	950	499	421	336	454	245	672	1360	2907	688	171	868	182
'46	236	175	169	3631	276	638	81	384	727	465	92	2310	741	395	315	329	310	177	604	1202	1703	516	154	668	117
'45-'42	270	188	110	2719	209	645	66	238	838	457	71	2081	714	273	209	272	340	130	431	1204	1282	408	131	573	114
'41	559	394	224	8475	585	1666	160	505	1965	861	185	6411	1275	555	517	652	586	336	1058	2756	2781	934	228	1399	225
'40	656	512	300	9538	755	2542	213	517	2333	1119	241	6465	1800	734	656	805	730	440	985	3623	3870	1288	303	1784	279
'39	295	247	131	6748	328	1023	93	251	1097	522	97	2721	704	326	286	365	331	236	722	1871	1276	593	116	878	79
'38	282	274	159	6121	381	1240	93	222	1174	472	98	2999	726	457	363	415	294	242	491	1981	1294	781	96	928	138
'37	640	499	308	9131	805	3026	240	458	2198	1093	222	3794	1731	925	755	1065	904	651	1626	4638	4130	1382	263	1772	280
'36	182	224	134	6177	380	1213	93	185	965	339	97	2408	988	397	289	430	182	257	432	1998	1224	709	78	772	110
'35	70	95	48	2802	165	455	40	62	314	113	40	834	286	183	136	185	69	102	188	802	353	349	27	314	67
'34	12	16	7	525	34	158	14	27	82	29	3	211	53	30	19	32	12	31	25	191	90	72	6	57	13
'33	5	9	2	474	27	84	7	7	38	8	4	91	52	12	12	12	3	20	30	133	42	37	1	45	2
'32	9	28	11	462	35	152	14	32	70	30	6	171	47	41	15	38	9	36	30	211	65	90	5	55	18
Before '32	34	68	22	2144	121	331	27	41	199	47	18	411	124	74	35	72	45	91	133	390	208	230	15	132	18
Unid.*	6	11	2	331	4	29		192	47	58	3	122	9	11	14	5	110	1	2473	9	1143	6	18	74	
Total	3744	3120	2064	67377	4732	14912	1334	4042	13561	6839	1448	35939	11740	5727	4585	5467	4479	3276	9647	23884	28073	8952	1792	11171	1898
PLYMOUTH																									
6 Mos. '48	1491	513	956	8883	977	1689	238	1340	2190	2325	430	10976	5417	3083	2108	1983	2033	868	2829	3999	14936	3125	1256	3523	522
'47	3725	1265	2437	23495	2793	4202	713	3316	6223	5379	1212	22650	9275	8994	4685	4244	4215	1684	5722	9626	17869	7462	2907	8333	1392
'46	3270	882	1313	14758	2066	3104	475	1981	4955	4136	888	16544	6992	4487	3250	3351	3283	1190	3455	7730	11679	5343	2326	6410	937
'45-'42	1764	683	1042	6458	1071	1933	238	891	2869	2390	512	6946	4317	2264	1757	1754	1953	634	1803	3975	5794	2951	1147	2686	437
'41	5830	2341	2861	39579	4049	8630	1029	3387	11402	8279	1998	30173	16936	8340	6360	6364	6546	2482	9530	17837	25018	9579	3333	11571	1605
'40	4073	2032	1978	39793	3113	7067	792	2042	8031	5715	1510	24740	13623	6635	4968	4843	4541	1986	5135	13520	16052	8611	2387	10019	1336
'39	3893	1867	2022	29970	3178	7163	792	1728	7288	4882	1321	22763	9976	7231	4762	4758	4001	1941	3734	13971	14226	8366	2144	9555	1158
'38	2176	1043	1372	24892	2655	4222	476	928	4264	2695	857	14005	6078	4868	3694	3434	2924	1450	2848	8264	6399	6296	1238	6431	798
'37	3609	1452	2716	36960	4802	8792	1029	1576	7672	5322	1994	27760	15334	7909	7231	7150	4213	2541	3564	14695	20689	10910	2523	11370	1621
'36	2803	1271	2074	37457	4581	7490	951	946	6444	4487	1927	24333	14226	7910	6573	5844	3146	2015	3486	12906	14124	10459	2062	9639	1795
'35	1708	1102	1382	26499	2492	3815	475	433	3094	2416	1224	12272	9115	5917	4332	3892	1497	1183	2016	5911	6682	6793	1060	5754	1297
'34	1236	838	1006	16019	1642	2792	317	173	2355	1819	763	7201	5516	3108	2903	2923	1181	903	1098	3884	4121	3329	784	4508	679
'33	711	448	580	13035	1316	2136	238	110	1737	1107	423	5070	3589	1987	1859	2280	611	666	554	2913	2320	2589	358	3729	409
'32	226	132	258	4691	575	885	80	32	890	303	162	1854	1102	871	652	734	203	413	240	1039	1098	1590	91	1522	156
Before '32	250	127	176	4117	442	257	80	22	440	214	198	1615	1079	1139	762	645	361	294	275	292	995	1712	131	1391	238
Unid.*	51	39	22	1088	47	116	1165	216	488	33	493	64	32	161	18	256	3	14004	32	7831	38	103	1302	7	
Total	38816	15835	23005	327674	35190	64283	7923	20078	70070	52057	15152	229495	124859	72775	58055	53957	40364	20053	56493	120594	169833	89141	23830	97743	14385
PONTIAC																									
6 Mos. '48	776	323	659	7752	496	1508	291	739	1202	1302	245	6984	3569	1612	1419	946	1199	579	1835	3601	15559	1695	563	1740	309
'47	1546	691	1307	16177	1551	4088	698	1570	3052	2636	606	15145	6165	3485	2863	2211	2310	1468	3328	7333	17384	4000	1225	4056	561
'46	1062	511	806	10453	950	2605	407	967	2158	1453	373	8961	3723	1865	1656	1400	1330	903	1840	4737	9820	2351	745	2609	319
'45-'42	880	344	505	4956	715	1493	234	405	1539	1227	279	4376	2269	1101	1101	912	1096	520	1059	2580	5249	1306	712	1305	281
'41	2744	1408	1797	31035	2650	6609	930	1930	5793	3801	938	19972	9437	4947	4143	3283	3629	2316	3335	11512	20817	5286	1898	5950	674
'40	1477	891	1043	25344	1950	4809	698	1307	3470	2129	633	12801	5945	3310	2430	2191	1758	1478	2425	7469	11629	3516	998	4177	403
'39	1063	508	702	15526	1032	3309	465	609	2124	1300	300	8557	3110	2374	1703	1520	1230	1152	1441	5370	6402	2534	682	2917	256
'38	677	358	438	10337	711	1770	291	357	1457	777	263	5807	2236	1664	1407	1019	731	795	857	2959	3674	1809	420	1981	192
'37	1369	837	960	20645	1548	4522	698	632	3178	1617	709	15247	6395	3742	3299	2431	1095	1515	1524	7443	12001	4513	689	4284	540
'36	853	586	730	15861	1578	3085	465	326	2016	1096	526	9417	4659	2619	2471	1693	793	1003	1122	5172	6902	3343	528	3340	405
'35	355	355	437	8647	1037	1492	234	150	1922	523	285	4376	2769	1910	1525	912	369	536	725	2343	3681	2142	263	1721	327
'34	142	119	117	2438	333	855	116	67	525	254	76	1755	859	676	561	353	135	326	245	1491	1077	631	118	780	125
'33	113	101	78	2136	259	888	116	65	447	206	53	1459	630	509	531	323	83	261	284	1254	952	628	64	703	106
'32	42	43	37	849	137	305	58	14	153	64	21	413	292	203	233	109	40	174	90	433	263	319	21	302	54
Before '32	91	107	149	3310	435	876	116	25	333	144	119	1898	1377	1399	1076	370	175	461	307	897	1483	2055	82	1145	204
Unid.*	23	18	16	803	25	71		522	73	149	28	366	28	14	111	13	107		6529	17	3355	16	38	397	2
Total	13205	7220	9781	176299	15137	38095	5817	9687	28570	18389	5451	117063	53459	33234	26553	19723	16051	13573	26895	64390	120143	39145	9046	37377	4757
ST'D'BAKER																									
6 Mos. '48	798	532	419	7132	425	1143	199	545	1273	1247	439	7917	7519	1495	1181	898	1143	359	1382	2199	4815	1831	478	1409	425
'47	1254	761	534	11643	981	2176	318	810	2475	1893	800	9349	10553	2652	1910	1282	1805	639	1829	3443	5481	2980	765	2709	898
'46	836	406	334	7218	760	1339	170	440	1533	1271	89	1268	918	1320	228	187	311	123	831	634	633	408	153	393	93
'45-'42	581	233	239	3971	459	591	100	244	934	699	297	3059	2313	1903	559	453	1803	163	459	994	1588	1175	261	871	227
'41	1414	652	527	15111	1240	1811	299	652	2531	1614	800	8071	5528	2487	1418	1169	1555	476	1272	3284	4245	3074	514	2578	619
'40	1411	277	177	7670	444	733	79	117	480	285	291	2270	2331	1843	547	352	242	215	358	1147	846	1124	50	759	220
'39	1076	523	504	13619	952	1444	239	495	2016	1111	436	6303	4357	1830	1101	887	1170	395	933	2254	2995	2400	476	2337	552
'38	405	387	301	11727	649	1116	199	353	1359	731	423	4631	2932	1326	815	637	823	327	649	2129	2008	1740	261	1735	409
'37	162	174	136	6174	372	668	100	215	551	296	213	2752	1455	455	322	372	221	302	1033	765	994	79	617	170	
'36	379	349	244	8151	639	1450	239	248	1078	616	478	4780	3230	1493	935	709	439	444	453	2333	1834	1893	169	1277	308
'35	141	277	117	7670	444	733	79	117	480	285	291	2270	2331	1843	547	352	242	215	358	1147	846	1124	50	759	220
'34	64	105	70	2878	142	335	40	30	203	94	93	649	453	352	322	144	69	139	155	493	330	618	25	322	106
'33	14	32	12	1689	45	130	19	13	51	40	14	183	171	83	81	53	28	61	63	199	117	249	15	104	27
'32	20	39	12	1377	72	137	19	14	64	41	16	3185	127	83	45	34	53	42	199	117	249	15	104	24	
Before '32	51	194	53	5372	329	411	60	21	194	107	112	1010	595	601	338	187	84	286	162	481	584	859	39	392	116
Unid.*	16	11	8	574	15	24	1	7	262	37	99	6	4101	24	7	42	4	981	2511	11	701	19	12	185	1
Total	6627	4522	3374	109107	7293	12477	1930	4219	14305	9334	4893	53222	243151	15923	10479	7550	9016	3984	11335	21458	27458	20296	3359	16233	4210
WILLYS																									
6 Mos. '48	88	56	403	865	105	474	31	82	689	265	233	2035	1810	437	333	1238	326	110	311	553	1427	249	320	851	35
'47	41	126	465	2162	105	471	45	135	1317	382	301	2429	757	599	411	1536	549	157	697	795	1438	273	514	1642	68
'46	19	38	256	1259	68	587	23	85	893	97	123	1939	1335	245	291	734	262	28	419	831	1205	100	316	1004	10
'45-'42	383	74	153	1609	84	225	15	58	654	246	115	557	1023	143	180	545	243	49	82	450	579	87	235	467	48
'41	560	115	133	3290	157	235	15	56	712	362	126	1269	599	291	195	253	235	140	334	539	872	243	176	377	75
'40	402	110	161	3143	214	317	45	128	805	358	130	1110	718	348	244	274	319	180	148	552	842	299	134	354	71
'39	118	33	38	2056	89	147	14	44	398	98	45	373	348	116	82	133	99	118	89	239	245	193	65	179	24
'38	137	65	81	1695	94	174	21	128	410	153	80	593	307	223	209	155	199	64	128	279	354	283	55	266	42
'37	284	282	228	6318	445	625	54	31	735	300	180	1950	1530	589	457	443	220	155	172	765	1283	763	115	802	132
'36	72	68	42	2583	70	51	4	1	229	91	39	195	161	53	41	64	42	12	11	86	132	59	13	94	20
'35	35	50	24	2012	23	20	1	1	82	49	13	91	83	19	12	18	20	29	4	5	21	34	18	12	55
'34	28	14	27	828	14	17	1	1	111	45	8	26	26	16	14	14	27	5	7	20	27	4	5	41	5
'33	21	13	3	699	22	27	3	3	99	19	5	66	65	47	37	43	11	7	14	43	41	97	8	65	5
'32	7	6	11	306	27	28	7	1	31	20	8	147	100	57	80	41	17	19	25	60	51	129	3	69	13
Before '32	49	91	46	2225	288	189	31	9	184	84	91	928	608	892	697	220	51	180	115	195	499	1151	39	717	148
Unid.*	4	4	3	185	35	13	3	60	30	31	8	56	7	3	10	8	41	3	692	8	311	6	23	187	1
Total	2240	1125	2077	31833	1841	3600	344	623	7339	2580	1471	12956	7040	4068	3299	5801	2675	1231	3340	5470	9341	3953	2033	7210	711
MISC.																									
6 Mos. '48	48	9	110	723	76	308	78	139	63	151	57	233	193	66	47	56	87	50	97	428	710	204	32	65	11
'47	26	19	96	360	46	60	46	70	125	356	37	317	117	95	31	68	55	27	55	142	224	41	44	87	2
'46	38	9	74	198	30	43	35	32	132	244	17	113	64	30	23	33	54	9	33	109	115	17	45	57	3
'45-'42	13	11	28	79	13	27	24	16	53	201	18	89	43	20	16	17	32	15	12	68	78	13	23	26	4
'41	58	36	77	283	47	89	24	16	109	559	51	214	128	58	40	72	73	14	24	132	220	97	51	93	3
'40	50	20	61	275	43	42	24	35	157	345	34	190	156	60	23	43	65	27	17	142	226	115	39	83	2
'39	44	24	59	330	42	38	35	23	174	242	29	159	137	62	28	39	35	10	32	142	163	58	42	60	7
'38	21	21	43	279	40	32	24	17	128	182	24	148	72	45	24	30	27	4	23	109	98	19	16	41	4
'37	30	27	73	456	89	72	35	27	129	261	29	311	124	119	36	62	68	13	18	172	181	43	44	122	14
'36	37	35	75	768	96	123	57	22	145	270	39	398	191	93	77	81	66	21	31	234	333	130	25	121	15
'35	34	31	44	638	89	129	46	5	148	140	24	257	203	67	64	51	38	15	26	195	206	116	18	91	16
'34	26	22	36	486	82	91	46	13	110	128	15	154	99	45	41	33	27	25	35	204	94	76	17	83	5
'33	27	26	18	792	51	116	57	4	219	71	8	156	125	57	38	61	29	33	29	156	118	72	7	84	12
'32	15	24	18	815	58	93	57	15	190	56	10	132	125	57	35	49	27	42	24	170	89	90	11	78	8
Before '32	68	179	195	7208	612	833	504	60	505	364	247	1585	698	1092	639	317	143	373	271	880	1120	1334	83	861	261
Unid.*	110	21	60	353	79	179	57	152	120	147	29	546	246	124	84	44	52	191	1943	147	638	8	119	1591	182
Total	648	514	1069	14174	1463	2266	1149	646	2507	3716	668	4993	2709	2087	1235	1068	874	869	2561	3430	4611	2433	616	3543	529
Total All Makes	338425	161880	232150	2948057	312375	472425	69722	134293	568853	483445	134245	1787398	924893	674283	522934	417961	358420	172488	391372	880036	1627965	740311	228043	735496	128372

Unid.*—Unidentified as to year of manufacture. Data from the Reuben H. Donnelley Corp. are as of July 1, 1948.

For Summary of Cars in Use by Makes, by Year of Manufacture, see page 94

AND YEAR OF MANUFACTURE—*concluded*

Model	Neb.	Nev.	N.H.	N. J.	N.M.	N. Y.	N. C.	N. D.	Ohio	Okla.	Ore.	Pa.	R. I.	S. C.	S. D.	Tenn.	Tex.	Utah	Vt.	Va.	Wash.	W.Va.	Wis.	Wyo.	Totals
PACKARD																									
6 Mos. '48	340	110	153	1968	148	7284	639	89	2586	391	671	3892	190	262	163	497	1322	165	150	525	612	285	928	89	48405
'47	248	79	181	1837	110	4913	534	76	2309	487	538	3541	194	288	94	507	1252	138	127	709	548	308	1162	69	41781
'46	201	52	156	1529	91	3855	512	67	1736	315	354	2727	189	232	76	375	1067	115	120	556	558	299	487	67	32150
'45-'42	132	50	78	1161	64	2973	353	30	1739	222	345	2240	194	191	28	428	901	117	87	252	517	247	423	47	26810
'41	277	132	288	3061	199	6775	779	56	3880	542	613	5871	469	505	75	836	1826	296	221	1158	1571	594	1013	92	44582
'40	394	160	354	4420	246	9286	1014	86	5193	648	967	7843	493	579	105	1052	2209	371	328	1301	1791	845	1308	142	63711
'39	186	68	171	2180	100	4458	513	31	2014	415	414	3319	322	291	66	503	1106	145	126	789	749	384	749	58	40491
'38	256	76	144	2440	146	5401	518	54	2383	362	487	3415	309	272	80	464	1017	189	146	627	832	440	712	63	42552
'37	415	131	400	5108	234	11101	1091	100	6165	654	1002	8413	787	624	158	949	1716	400	335	1204	1971	966	1649	127	87046
'36	225	84	137	1936	91	5132	393	36	2380	307	537	3475	304	209	76	291	616	201	140	577	832	396	936	56	39472
'35	99	18	60	855	38	2029	148	19	849	169	202	1437	115	74	43	93	237	83	71	212	317	137	368	17	15791
'34	8	5	11	270	10	588	26	2	160	24	32	368	34	15	5	25	70	12	16	42	69	22	45	4	3579
'33	7	1	7	136	7	308	9	1	116	12	22	208	15	9	1	11	57	9	4	27	55	10	27	4	2213
'32	13	11	13	284	13	572	14	4	218	23	48	351	29	14	4	23	62	18	15	27	81	22	53	7	3591
Before '32	43	22	33	697	31	1190	51	12	425	58	203	747	60	42	33	63	154	48	50	69	307	71	113	6	9553
Unid.*	3	1	2	30	15	79	4	2	133	5		226	22	18	10	33	21	1	1	2	7	2	7		5302
Total	2845	980	2199	27912	1562	66054	6892	647	32275	4634	6655	48051	3726	3624	1018	6150	13623	2306	1936	8076	10817	5028	9981	850	547029
PLYMOUTH																									
6 Mos. '48	1621	200	414	3459	502	11201	2364	733	7077	1824	1129	10012	647	1068	1087	2276	6832	504	347	2797	1325	1206	4173	358	140585
'47	3982	466	1045	10143	1052	26807	6084	1948	20506	4099	3331	26082	1762	2996	2139	5201	16858	1294	736	6569	4662	2498	9841	812	322542
'46	2523	296	801	7187	819	19940	4765	1192	14604	3294	2182	17651	1308	2209	1230	4018	12619	866	485	4626	3133	2779	4447	561	229212
'45-'42	1177	170	306	3905	477	9810	3170	698	9021	1261	1505	7995	664	1627	657	2316	7270	705	239	1536	2451	1465	2255	311	119182
'41	3906	603	1419	17649	1608	42482	10781	2089	37107	4807	6062	37574	3316	5423	1882	7887	22391	2123	1067	9419	10067	5524	9184	968	486188
'40	2913	473	1327	13859	1166	34561	6951	1520	29677	3981	4817	29356	2705	3633	1487	5348	14505	1738	879	8294	7510	4157	8076	739	384192
'39	3182	388	1387	14089	1144	34893	7138	1159	26582	3563	4095	27971	2607	3524	1450	5199	13417	1566	636	5415	6567	3891	7502	711	351694
'38	2307	239	992	9726	736	23966	4121	825	14345	3167	2568	17718	1995	1781	1094	3334	9967	946	659	4682	4253	2534	5691	483	233726
'37	4077	504	1570	16517	1386	38551	7254	1352	35091	5144	6270	37736	3657	3504	1721	6757	16456	1969	1063	6757	10189	5730	11083	933	438706
'36	4427	439	1495	13883	1182	34329	5602	1038	29777	4385	5632	33200	3286	2583	1630	5171	12342	1923	1046	5985	9073	5297	9827	893	383391
'35	2904	280	837	6854	663	17051	3503	1075	15543	3043	3553	15673	1693	1456	1139	3263	7264	1105	653	3689	5455	3049	6859	499	219264
'34	1621	158	567	4728	451	12329	2790	482	11978	1988	2587	12071	1162	1123	549	2416	5021	723	481	2137	3776	2402	3702	309	148658
'33	1185	108	439	3427	230	9902	1646	326	8222	1093	1940	8184	807	757	328	1414	2768	447	325	1359	2831	1484	2614	160	102871
'32	383	26	240	1807	63	4945	428	112	2868	366	874	4027	292	179	160	425	839	89	109	377	1388	513	1052	89	41030
Before '32	904	39	110	526	24	2404	269	279	1738	350	661	1438	108	110	374	378	1541	128	142	348	1242	369	1472	88	32028
Unid.*	42	4	3	90	103	258	13	5	319	71	9	791	73	81	84	234	248	7	1	32	8	14	95	3	30181
Total	37034	4383	12982	127531	11651	323031	66820	14833	264253	42436	47215	287477	26083	32074	16911	55637	150139	16133	9178	65051	73950	42712	87873	7892	3661449
PONTIAC																									
6 Mos. '48	848	115	359	3965	302	9983	1904	219	5358	1254	1053	6450	499	776	438	1477	3989	343	296	1788	1045	497	2511	145	102606
'47	1902	254	886	9848	570	22207	4383	690	14789	2664	2603	15490	1250	1992	873	2685	8726	829	636	3715	3610	920	5937	312	212995
'46	997	169	448	6031	329	14012	2768	423	8862	1557	1679	8557	826	1228	505	1625	5278	545	400	2264	2307	976	2191	235	128220
'45-'42	1373	108	191	3278	306	6263	2212	262	5124	903	1171	4532	519	1038	212	1134	4014	401	232	827	1885	674	1340	173	74235
'41	2145	400	1005	15113	896	29622	6776	773	22804	3982	4425	20052	2243	3251	786	5838	12831	1585	804	5200	6052	2251	4643	462	307923
'40	1379	244	728	11357	551	20518	3937	438	15020	2681	3006	14748	1425	1556	437	2134	6597	1032	658	3750	3960	1650	4339	278	206100
'39	968	130	583	7945	322	14520	2350	267	9259	1927	1538	9088	1004	989	326	1509	3827	486	401	2372	2344	978	2886	175	132379
'38	700	107	379	5282	188	10071	1427	210	5563	1247	1122	5606	527	548	266	920	3221	378	229	1348	1551	603	2061	118	86649
'37	1560	242	770	10001	428	19935	2481	416	16672	2660	2807	15207	1395	1007	578	1890	5103	886	553	2522	4093	1667	5517	337	200197
'36	1278	170	581	6391	279	13899	1341	313	10649	2087	2092	9517	987	649	456	1358	3592	563	429	1635	2707	1381	4145	270	136218
'35	902	93	333	3110	216	7650	886	278	5132	1300	1015	4790	448	427	336	647	2151	372	234	1030	1458	624	2605	190	74368
'34	306	33	178	1537	67	3039	396	85	1449	382	389	2210	322	164	114	294	834	111	131	384	483	238	862	60	29389
'33	231	25	186	1726	49	4631	367	104	1283	282	283	2210	292	187	77	140	581	81	102	331	403	223	844	45	26949
'32	130	5	81	580	10	1469	85	19	610	95	98	756	97	35	23	67	260	20	91	135	183	121	356	11	10017
Before '32	704	19	259	968	57	3007	234	266	2558	386	583	1899	240	121	291	199	886	123	153	357	782	306	1905	58	34716
Unid.*	11		4	60	38	188	4	5	314	47	1	477	30	34	30	67	83	8	5	8	13	2	49	4	14188
Total	14881	2114	6769	87192	4807	181310	31531	4768	125446	23324	23835	121710	12117	14002	5758	19944	61873	7763	5344	27646	32677	13111	43720	2874	1777129
ST'D'BAKER																									
6 Mos. '48	699	186	175	2403	256	7048	1589	267	4037	716	1255	6390	444	553	302	1123	3293	349	243	1142	1249	522	1844	173	83453
'47	1347	232	327	4191	487	11367	2325	552	7518	1360	2054	10622	743	913	520	1728	5991	661	264	1837	2613	953	3287	303	131748
'46	173	38	103	626	44	1646	312	92	997	479	329	1438	124	157	95	258	1026	106	37	842	419	161	344	46	25630
'45-'42	490	68	117	1142	154	2657	786	180	2589	410	1017	2787	232	317	152	682	2163	374	69	437	1352	489	843	112	41818
'41	1151	209	301	3854	370	7554	2157	442	7525	1197	2459	9199	642	766	467	1769	5102	950	199	1920	3996	1332	2684	324	119739
'40	767	178	283	2871	300	6135	1409	309	6549	998	1704	6814	468	642	429	1366	3205	772	191	1563	2786	1191	2113	256	93825
'39	573	118	227	2310	206	5098	984	182	4664	664	1175	5933	531	441	245	875	2481	693	138	1024	2042	863	1757	138	71040
'38	313	52	144	1401	106	2904	269	98	2093	355	690	3360	231	124	132	301	1502	311	70	454	1123	379	775	96	35999
'37	569	113	263	3006	162	5836	425	172	5173	650	1329	7314	494	262	233	627	2337	610	144	629	2201	846	1882	150	69621
'36	438	81	138	1257	99	2786	187	101	2169	473	983	2509	166	112	148	301	1207	349	61	342	1639	356	1219	108	38957
'35	282	42	84	699	49	1553	137	88	1288	240	518	1257	78	71	117	156	700	158	38	170	922	220	616	56	21197
'34	198	25	88	531	37	1536	107	66	913	153	376	983	59	67	85	70	456	89	23	130	591	98	393	24	15360
'33	68	10	40	198	5	639	28	18	279	49	85	345	25	18	17	33	104	19	7	48	158	31	158	12	5727
'32	59	4	67	279	15	860	32	10	288	41	96	452	33	9	18	30	130	19	16	37	173	31	167	6	6355
Before '32	498	43	120	788	54	2022	93	132	1136	181	694	1543	89	64	189	140	530	115	100	136	864	250	850	65	23346
Unid.*	9	2	3	19	15	76			182	20	2	299	13	8	23	34	48	4	2	4	2		11	1	5526
Total	7635	1401	2490	25572	2359	59735	10720	2719	47370	7935	14768	61065	4373	4521	3172	9493	30275	5582	1603	10715	22110	7722	18941	1870	789043
WILLYS																									
6 Mos. '48	184	14	44	579	119	2324	315	234	1603	145	168	1515	79	97	33	788	1404	49	107	262	157	89	427	180	23353
'47	168	43	39	782	198	2820	341	364	2359	299	276	2255	121	103	42	1148	1875	76	187	642	314	101	725	294	32938
'46	57	21	14	1094	125	2449	91	211	1968	144	77	1324	143	26	7	714	1255	12	119	538	300	25	341	111	22507
'45-'42	55	13	28	634	54	1399	154	84	961	181	205	896	118	87	18	532	817	55	33	222	423	141	122	48	15011
'41	104	23	75	640	56	1397	418	99	1400	157	493	2147	9190	139	74	416	632	152	44	243	741	214	271	45	21030
'40	100	17	113	768	69	1629	395	71	2097	241	600	1923	96	165	95	486	600	97	66	215	614	328	409	48	22533
'39	50	8	42	359	32	896	117	22	964	122	186	666	57	72	27	146	275	48	22	156	182	131	169	18	10121
'38	79	14	31	448	33	1173	157	49	803	172	233	834	42	70	42	126	335	41	37	147	245	183	233	26	11738
'37	313	39	134	1149	90	2458	362	93	3339	473	734	2244	104	209	105	357	746	147	85	366	1079	555	768	79	35408
'36	34	7	22	64	22	197	19	14	459	73	409	95	9	35	13	105	136	32	15	27	512	30	33	11	6523
'35	8	6	6	43	12	57	16	6	161	42	168	37	5	16	5	49	59	14	2	18	225	12	18	3	3702
'34	4	3	1	20	4	81	13		58	17	88	34	3	21	2	40	57	5	4	7	87	12	8	2	1894
'33	16	3	7	104	4	369	11	4	220	14	40	162	15	36	6	33	43	7	7	11	80	41	42	3	2746
'32	58		18	76	4	325	20	10	252	23	52	291	15	10	6	18	32	5	26	22	65	43	151	8	2813
Before '32	531	17	90	424	22	1596	76	216	1608	125	353	1324	61	61	178	93	319	48	90	101	534	205	881	45	18817
Unid.*	10			13	8	59			54	4	1	109	2	7	7	44	41	2	2	2	1		4	1	2103
Total	1870	228	864	7197	880	19229	2505	1477	18329	2232	4063	15651	1060	1154	660	5085	8626	790	848	3099	5759	2110	4602	922	233237
MISC.																									
6 Mos. '48	48	6	40	776	42	3938	152	12	180	40	116	430	50	19	58	49	387	19	36	197	162	7	61	11	10857
'47	22	22	17	116	46	630	31	12	105	44	29	242	26	32	91	48	563	12	10	92	34	6	148	38	4955
'46	10	8	6	77	21	249	24	8	60	29	10	195	26	16	49	53	313	15	8	71	14	2	43	9	2874
'45-'42	4	21	3	27	25	67	21	5	65	18	17	97	11	10	32	46	274	4	2	27	33	8	69	23	1836
'41	21	9	8	59	40	1029	34	10	129	54	28	133	31	23	122	65	689	16	9	19	201	19	155	36	5409
'40	15	9	11	97	17	1645	36	7	132	61	30	109	33	24	130	70	413	10	14	32	74	12	61	12	5342
'39	18	6	8	92	19	382	58	16	185	39	62	133	12	35	93	51	291	14	12	26	57	38	83	17	3702
'38	16	17	10	82	26	266	33	3	97	35	23	92	20	13	66	29	238	5	5	34	25	9	35	9	2660
'37	18	18	16	101	78	292	24	8	178	52	35	167	47	11	121	55	331	24	10	38	102	11	129	13	4434
'36	33	7	19	169	93	577	32	13	335	81	101	323	51	16	107	52	272	39	9	41	146	37	166	15	6217
'35	25	5	23	166	46	383	17	7	330	41	79	233	42	22	77	39	133	8	11	40	117	35	126	13	4709
'34	21	4	14	132	43	368	23	6	221	51	67	252	57	20	38	35	99	17	6	47	100	28	81	4	3909
'33	26	7	18	163	29	445	36	9	221	26	44	338	39	39	23	40	60	12	10	45	94	21	77	8	4199
'32	16	11	19	204	18	481	25	9	218	34	69	297	26	25	22	40	59	14	27	38	75	26	75	9	4154
Before '32	480	75	152	1327	338	3296	172	249	2007	345	1106	2591	176	81	374	184	429	177	172	244	1282	335	1213	72	37101
Unid.*	35	6	28	167	68	637	33	16	84	86	126	170	53	98	72	97	1325	42	516	22	6	147	129	16	11081
Total	888	231	391	3755	783	14685	751	389	4527	1036	1959	5801	710	475	1475	953	5676	428	856	1015	2522	739	2652	305	113478
Total All Makes	348540	38453	104738	980691	107843	2464284	591977	139624	1892748	454049	410243	1914022	169679	328387	164337	446170	1482063	144566	75330	501749	594816	285794	768262	71730	23967718

Unid.*—Unidentified as to year of manufacture. Data from the Reuben H. Donnelley Corp. are as of July 1, 1948.

For Summary of Cars in Use by Makes, by Year of Manufacture, see page 94

TRUCKS IN USE BY MAKES, STATES

Model	Ala.	Ariz.	Ark.	Calif.	Colo.	Conn.	Del.	D.C.	Fla.	Ga.	Idaho	Ill.	Ind.	Iowa	Kan	Ky.	La.	Me.	Md.	Mass.	Mich.	Minn.	Miss.	Mo.	Mont.
AUTOCAR																									
6 Mos. '48		2	1	91	6	49	7	1	13	1		119	31	1	1	7	1	1	45	98	29	7		7	4
'47	8		3	317	37	183	28	18	27	3	7	268	59	4	6	11	5	16	93	309	98	48	1	46	8
'46	10	11	3	406	39	263	26	16	97	16	8	129	79	2	2	5	26	9	93	456	76	25	3	98	10
'45	5	2	1	219	22	99	10	10	44	12	4	85	46	1	9	5	8	6	32	213	28	52		46	6
'44	10	22		159	3	49	6	1	2	1	3	22	22			2	1	1	45	125	22	6		12	1
'43	2	11	3	39	1	2	3		1	1	1	8	3		1	3			5	11	3	3			3
'42	16	21	2	74	2	20	7	12	12	2	8	23	15	2	9	3	10	4	15	67	8	2	2	14	6
'41	5	17	3	299	11	126	12	44	23	8	5	67	18	2	7	9	6	9	47	271	31	4	7	37	6
'40	7	1		134	2	70	7	48	2	2		52	3	2	2	1	3	6	18	218	20	3	2	16	1
'39		2		103	7	69	12	13	2	1		66	8	12		2	1	3	48	154	10			16	
'38	2	2		82	3	42	7	17	2			41	2	5	3	1	2	1	27	138	9	7	1	9	
'37	3			105	2	48	6	6				52	4	2	2	1			31	142	18	7		19	
'36	2			46		40	5	14	5	1	1	45	2		6	1			18	106	9	2		4	
'35			2	24	1	28	2	3				26							2	7	83	4	3		2	
Before '35	1	3	2	276	9	79	14	28	16	3	1	137	15	6	7	19	1	5	44	260	24	7		34	
Unid.*	1	1			1		5	9	2	3		8	1	1		1	4		72	3	18			29	
Total	70	95	20	2375	148	1164	157	240	248	54	38	1167	307	40	55	71	68	71	640	2654	407	176	16	389	35
BROCKWAY																									
6 Mos. '48	1			13		51	5	3	1			9	28		1	1		12	63	110	40			8	
'47	3			26		130	18	18		2		33	119	2	2	1		24	101	251	59	2		16	
'46		2		33	1	128	10	22	6			27	180		2	1		23	92	308	69	1		6	
'45		1		16		71	5	19	6			11	128		1	4		12	46	183	10	1		4	
'44				10		32	3	5					11			1		8	21	88			1		
'43		1		6			1	1	1	1		1			3		3		10	2	1	1			
'42		1		6		8	1	1	1	3		2	2		1			12	9	27	2				
'41				18		123	5	20	2			5	2					18	62	198	2			2	
'40				3		47	3	8	1			2	1		1		1	8	48	84	3				
'39				18		68	2	8				2	1			1		9	38	133				2	
'38				7		43	2	7				4	1					4	27	87	3				
'37		1		16	1	39	2	4	1			3						4	34	67	1			2	
'36				5		36	2	6		1								5	24	68	3			1	
'35				3		8		4	1	2		1						4	7	50	1				
Before '35				23		67	2	1	3			7	4	3		2	1	10	23	97	5	7		1	
Unid.*						2	3	3	1	1			1					1	88	6	23			4	
Total	4	4	3	283	2	851	84	129	24	10		107	478	5	11	11	5	152	691	1779	222	12	1	46	
BUICK																									
6 Mos. '48	8	1		7	8	5	1	1	3	20		8	5		3	3	15		6	3	5	8	6	1	2
'47	48	3		87	20	11	4	1	12	16	2	9	18	2	17	6	38	4	22	2	16	2	16	4	9
'46	34	2	2	59	12	2	2		3	16	2	4	5		8	2	11	3	11	4	10	2	7	3	1
'45	2		1						2	7		1	4			1	7	1	2	2	1		2	5	
'44	5			2					1	6							4		1				1	3	
'43				4	2					1									1						
'42	26	5		14	9	3	2		4	10	1	4			2	7	21		4	1	2	1	10	1	1
'41	43	7		107	11	10	3	2	15	25	1	8	2	3	4	6	24	3	7	4	14	6	23	1	4
'40	18	2		105	7	18	2		15	6	1	8	2	2	7	5	33	3	9	8	15	3	19	1	4
'39	15	1		90	8	7	1		13	22	3	10	1	1	11	8	21	2	10	2	13	8	10	4	2
'38	37	1		65	9	1	2	1	14	10	2	5	1	1	10	9	23	6	12	8	7	7	14	5	1
'37	24			76	9	6	4		16	22	3	13	8	3	8	4	22	4	11	5	5	10	21	5	2
'36	30	4		52	6	10	4		30	17	4	14	15	5	17	4	12	3	3	9	16	9	16	6	3
'35	15	2		42	2	5			15	8	1	1	16	4	7	12	6	4	3	7	8	3	7	4	2
Before '35	79	49		910	277	323	34	62	133	106	79	132	294	159	433	65	41	152	377	92	120	359	57	197	139
Unid.*	7	2		10	3	34	3	3	1	6	3	1	12	2	2	3	4	2	35	1	14	2	1	42	
Total	391	79	3	1630	385	437	62	10	277	302	101	218	373	182	529	135	280	189	175	143	249	424	212	281	170
CADILLAC																									
6 Mos. '48	13	1	7	23	2	5	1	2	32	37	1	13	1		4	15	8	1	12		26	5	9	15	
'47	95	2	33	91	19	8	6	1	46	59	2	28	2		10	58	19	16	36	21	44	17	46	6	1
'46	58	6	8	45	4	10	4	1	15	70		20			5	44	2	11	6	10	25	8	12		1
'45				2																					
'44	2		1	2	3										1						1	1			
'43				2															1						
'42	15	2	6	10	2	1	2		9	19		8			2	9	2	1	5	7	9	2	4		
'41	42	1	8	61	7	16	2		16	47		21			4	37	10	16	12	12	36	12	21		2
'40	3	2	2	41		7		1	14	4		4			1	4	1		5	4	6		3		
'39	14	2	1	32	3	3		1	13	8	1	21				10	2	2	3	5	6	1	2		
'38	8	5		26	2	3		2	5	5	7	8			2	2	1	2	3	2	4	1	2		
'37	4	3	2	26	1	2	1	2	4	2		1	1			7	1	1	6	1	4	1	1		
'36	1	2	2	19	1	3			6	2	1	5	1	1	1	4	1	2	4	5	2	1	1		
'35		2	1	17	2	2			1	1		4	1		1	1			1	1	3				1
Before '35	6	17	14	341	42	49	6	1	10	12	4	36	38	27	25	15	3	19	7	26	7	46	7	33	20
Unid.*	2			6		1	3		4	4		1		9	1	2	1		22	1	12		1	7	
Total	253	45	85	744	88	110	27	11	175	266	16	388	44	37	57	206	51	71	119	94	188	96	109	92	25
CHEVROLET																									
6 Mos. '48	2745	606	3183	8620	2059	1003	214	432	2638	4182	917	10755	4759	3127	4918	2858	2699	1303	2510	2814	6725	2385	2798	5002	875
'47	5119	1105	4091	13994	2783	1668	793	728	5304	5687	1449	10693	4875	5428	5616	4728	3988	1599	3304	3350	7303	3544	4512	6968	1569
'46	6144	1403	5499	11104	3187	2503	781	775	5289	6782	1932	10740	6934	6080	6689	5681	4790	2192	2523	4109	7432	5502	6158	6931	2453
'45	1001	256	1073	3871	358	391	88	37	865	1094	283	1392	861	935	1110	1094	618	420	821	582	1190	509	813	1238	376
'44	661	105	443	1717	344	146	43	20	339	474	184	633	108	588	550	433	276	260	335	233	534	381	355	481	133
'43	55	78	29	737	24	6	91	1	64	56	43	34	23	10	30	45	35	12	192	8	26	43	54	27	85
'42	3989	822	2536	2988	1834	857	395	98	2777	3402	943	2945	2114	1835	2271	1912	2227	943	255	1110	2211	1705	2997	2021	1067
'41	4962	1195	4112	13878	2889	2202	602	646	4205	5184	1716	6846	5011	4432	5981	4275	3348	1789	1973	3355	5832	4001	4098	5918	2013
'40	3717	922	2985	10133	2332	1861	473	447	3071	3614	1448	8037	4215	3871	4073	3589	2994	1598	1596	3178	4343	3567	3380	5337	1869
'39	2903	760	2373	7859	2122	1472	313	335	2047	2757	1129	5800	3809	3404	3264	2805	2105	1282	1234	2564	3319	2531	2269	4101	1228
'38	1600	522	1697	6365	1479	875	309	174	1593	1626	787	3840	2311	2261	3424	1977	1270	882	946	1582	2063	2215	1649	2798	964
'37	2727	1009	2694	9311	2462	1796	403	250	2317	2730	1379	5953	3703	3275	4175	3010	2159	1475	1230	2714	4515	3659	2522	4400	1349
'36	2086	639	2390	8546	2534	1733	303	144	2145	2480	1453	5561	3910	3271	4554	2427	2080	1247	1018	2356	3795	3641	1998	4438	1457
'35	1219	548	1466	6311	1379	1078	167	124	1173	1599	942	2720	3106	2172	2658	1320	1059	792	594	1296	2337	2619	1057	2431	1091
Before '35	2385	1381	4643	21634	4348	3634	492	112	5038	4174	2082	6896	6557	5491	10592	3122	2928	1946	1551	2282	4813	9244	2685	6865	2891
Unid.*	109	31	71	215	101	18	35	139	273	578	123	317	75	88	170	135	757	11	4608	51	2897	76	231	8542	2
Total	41434	11370	39285	127203	30213	21043	5502	4461	39516	46399	16810	84762	52371	46248	60275	39409	33313	17751	24688	31594	59335	45822	37576	67498	19422
CROSLEY																									
6 Mos. '48		18	4		31	9	14	7	49	14	1	61	91	9	17	25	53	4	13	10	54	8	10	32	7
'47	32	7	11	243	26	17	21	3	156	26	3	35	96	17	19	58	24	15	29	37	63	42	6	29	4
'46				2			2		9			2	1			3			1		1				
'45									1	1			1												
'44																	1		1						
'43				2	1	1							1		1		1		1						
'42	2			4	1	1	1		18	1			2	1		2	1	1		2	2	6			1
'41				15			2		5	3			5			3	1			1	1	1	3	1	1
'40	2			5	1				2	1					1	1						1			1
'39				1											1						2	1			
'38																				1					
'37				1																					
'36				1										1											
'35									•																1
Before '35				1					2				1					1		1		1			
Unid.*	1		1	1			1	1	1			1		1		1			2		6		1	13	
Total	127	25	16	384	60	28	43	11	243	46	4	99	198	29	39	93	82	26	47	52	129	60	20	75	15

* Unidentified as to year of manufacture.

Data from the Reuben H. Donnelley Corp. are as of July 1, 1948.

AND BY YEAR OF MANUFACTURE

AUTOCAR

Model	Neb.	Nev.	N.H.	N. J.	N.M.	N. Y.	N. C.	N. D.	Ohio	Okla.	Ore.	Pa.	R. I.	S. C.	S. D.	Tenn.	Tex.	Utah	Vt.	Va.	Wash.	W.Va.	Wis.	Wyo.	Totals
6 Mos. '48			3	85		180	27		53	1	42	164	38	1		5	13	1	3	24	9	12	2		1185
'47	7	3	17	338	2	812	48	3	289	4	53	674	70	7	12	4	22	4	10	57	27	31	45	2	4118
'46	1	3	26	441	2	906	129		205	10	16	547	145	14	1	12	21	4	6	133	15	53	17		4616
'45	4		5	201	7	403	42		124	14	44	250	54	13	1	2	10		6	41	17	26	33		2262
'44			6	101	1	164	15		73	9	5	218	26	2	1	2	6			41	2	9	3	1	1202
'43	1		1	14		27	3		5	4	2	29		2		1	7	2		2	2	3	4		208
'42	3	3	4	72	1	77	4		37	16	10	118	11	3		7	20	1	1	21	8	2	3	2	772
'41	2	3	6	269	1	407	23	1	99	5	11	364	81	4		1	25	4	1	43	15	12	12		2483
'40		3	9	147	3	306	11	8	81	4	5	199	39	3			5	1		22	5	7	6	2	1484
'39			7	182		358	1	1	63	3	4	282	34	1	2	1	4		1	23	2	6	6		1510
'38		1	3	135		232	2	1	26		4	147	24		1	1	1		2	8	3	3	6		1002
'37	1		3	164	1	379	3		69	2	3	213	30				3	1	2	10	3	6	9		1351
'36		1	1	106		280			32		4	143	12	2						2	1	3	11		914
'35				53		186	8	1	16			51	9			1			3	2	1				518
Before '35	6		4	219		706	6	15	47	6	20	379	29	4		1	9		3	7	23	4	22	2	2511
Unid.*	1		1	52		11			1			21	14	1	1		1		1				3		273
Total	26	17	96	2579	18	5438	318	26	1199	77	227	3797	628	57	19	39	149	18	39	439	132	177	182	9	29409

BROCKWAY

Model	Neb.	Nev.	N.H.	N. J.	N.M.	N. Y.	N. C.	N. D.	Ohio	Okla.	Ore.	Pa.	R. I.	S. C.	S. D.	Tenn.	Tex.	Utah	Vt.	Va.	Wash.	W.Va.	Wis.	Wyo.	Totals
6 Mos. '48			9	227		350	2		18			250	3			1	8		13	9		11			1247
'47	2	1	10	558		1308	11		60			1085	9	1		12	26		32	44		120			4062
'46	1	1	16	408		1481	26		60			845	7	3		8	11		24	30	1	47	3		3704
'45			4	276		854	10		37			339	3				1		6	19		17			2087
'44			4	179		388	2		3	1		299							1	9	1	11			1078
'43				13		8					1	43													102
'42		1		29		108			1	2		95	2				5			6	4	4			334
'41			11	280		1196	1		11			372	9				2		11	25	3	1			2377
'40			5	151		792	10		4			223	5	3					10	25		3			1439
'39			2	153		673	2		5			213	9						3	20		5			1066
'38			2	127		634	1		2			141	2						3	12		1			1110
'37			3	121		724			2	1		169	1				1		1	9		3			1239
'36			3	136		727	1		3			142		1		1			3	2	2				1174
'35			8	74		337	2		2			46								2					559
Before '35			9	161		934	6		7		5	166	3	1	1	1			6	12	1	4	2		1578
Unid.*				76		27	2		1			11		1		1		1					1		293
Total	3	3	84	2971		10842	76		216	4	6	4294	51	10	1	24	60	1	117	244	12	227	5		24085

BUICK

Model	Neb.	Nev.	N.H.	N. J.	N.M.	N. Y.	N. C.	N. D.	Ohio	Okla.	Ore.	Pa.	R. I.	S. C.	S. D.	Tenn.	Tex.	Utah	Vt.	Va.	Wash.	W.Va.	Wis.	Wyo.	Totals
6 Mos. '48				7	1	202	2		6	8		6	4	1	2	5	1	1	11	1	4	1			383
'47	3		3	50	1	26	14		8	8		7	3	10	3	14	10	5	1	17	1	10	4		577
'46	1		1	30		12	4		11	1		3	1	4	1	18	6	4	1	4	1	10	3	1	326
'45						6	1					3		6		2	1			1					57
'44				1		1	1					4				4	5			2			1		43
'43						1						1			1		1								12
'42				35	1	8	6		1	1		4	2	3		1	9	4		9		6	1	1	230
'41	4	6	3	72		20	10		4	5	1	8	3	18	1	2	7	3	2	17	10	4	2		545
'40	4		2	76	3	20	14		8	5	3	3	2	18		1	7	3	2	15	2	6	3	1	491
'39	1	1	1	45		14	10		4	3	8	6		7	1	2	12	3	1	4	5	5	5	2	414
'38	2		2	43		20	4	1	5	3	3	3		9	1	5	18	1	3	15	5	7	2		410
'37	5	3	2	27		36	3	1	12	6	6	5	1	16		3	16	3	3	9	5	7	14		320
'36	1		3	59	1	38	2	3	10	9	4	18		18	5	2	24	1		10	10	8	12	1	342
'35	1	1		22		20	9	2	43	8	3	1	3	7	3	6	12	1	2	10	3	5	4		358
Before '35	288	21	50	244	4	419	47	63	119	245	185	134	44	48	151	55	295	18	62	63	409	58	754	35	8207
Unid.*	2			59		4	2	1		6		4	1	3		1	2						1		294
Total	312	34	87	820	11	847	129	71	231	303	184	211	64	187	188	119	430	47	77	187	452	128	807	41	13404

CADILLAC

Model	Neb.	Nev.	N.H.	N. J.	N.M.	N. Y.	N. C.	N. D.	Ohio	Okla.	Ore.	Pa.	R. I.	S. C.	S. D.	Tenn.	Tex.	Utah	Vt.	Va.	Wash.	W.Va.	Wis.	Wyo.	Totals
6 Mos. '48			1			37	6		2	1	8	2	6	24					1	17		4			340
'47	1			13		39	64		10	2	22	2	3	33			7	2	2	43	18	15	2		932
'46				7		16	26		5	4	7	1	5	23			4		3	12	14	22	2		516
'45						1								3											3
'44				1			1			1				1											15
'43																									3
'42				7	1	7	12					3	1	1		1				5	2	7			176
'41	1			22	1	36	25		2	1	8			25			6	1	5	29	6	14			565
'40				7	2	29	5		1		4	2	1	5			1		1	5		1			166
'39				10		3	1						2	2			1		2	5					153
'38				5		2	3			2				1					1	1		3			108
'37				16		3	5		4		3	2	1	2	1	1	2		1	3		6	1		122
'36		1		12		8	1	1	3			3	1	2			3		1	3	3		1	1	109
'35				10		4	2	1	1		4			1		1	1			3			2		70
Before '35	23	4	3	112		145	8	8	23	44	18	26	6	14	11	4	22	6	13	9	51	9	37	1	1409
Unid.*				14		1	1				3	8		1		1		1				1			106
Total	25	5	4	236	4	331	160	9	49	58	78	45	25	148	12	8	47	10	30	135	93	80	45	3	4789

CHEVROLET

Model	Neb.	Nev.	N.H.	N. J.	N.M.	N. Y.	N. C.	N. D.	Ohio	Okla.	Ore.	Pa.	R. I.	S. C.	S. D.	Tenn.	Tex.	Utah	Vt.	Va.	Wash.	W.Va.	Wis.	Wyo.	Totals
6 Mos. '48	2264	150	481	2715	934	3785	3814	1099	7372	3806	1618	4484	412	1982	1400	3865	9801	784	470	3170	1801	1301	2017	643	139546
'47	2804	301	784	4111	1521	9722	6139	1389	8109	8579	2719	8925	773	3135	1420	5248	14268	910	604	5791	3038	2092	5385	872	205990
'46	3554	318	884	5853	1968	12096	10132	1530	11894	4935	3855	14335	927	4482	1546	6373	21232	1227	713	5382	4536	3418	5380	983	250928
'45	270	53	150	858	182	1737	1193	236	648	1182	460	1617	143	600	196	716	1735	181	137	1200	527	459	735	129	36353
'44	170	19	64	313	153	779	688	157	115	594	294	655	61	386	136	438	749	151	50	615	375	258	433	90	17479
'43	8	2	3	28	24	67	13	14	148	49	86	72	8	14	3	75	132	22	5	32	90	38	6	17	2750
'42	1556	180	191	1520	911	3099	3830	982	4741	1817	1850	3867	246	1692	714	2982	10698	548	205	1678	2162	1511	1754	531	94777
'41	2509	325	699	4758	1400	10068	6804	1743	8235	5016	3481	10420	742	3485	1423	4995	14380	1064	889	4800	4439	3332	4569	843	202302
'40	1937	285	777	4323	1167	8911	4732	1615	6784	3663	2399	8379	689	2551	1169	3555	11085	903	545	3830	2344	2999	3907	696	162236
'39	1807	199	779	3238	1062	6837	3797	1153	4972	3525	1825	5898	588	1885	925	2724	9620	821	434	3089	2388	2349	3048	572	127437
'38	1363	149	395	2516	715	5333	2712	956	3333	2525	1193	4006	322	1184	676	1809	6265	506	305	2101	1602	1435	2174	351	89285
'37	1718	277	889	4048	1124	9499	3407	1371	6730	4061	2614	7867	626	1850	948	2540	10545	639	461	3207	3296	2796	4298	578	145599
'36	2025	224	832	3120	946	6771	2614	1183	5421	3742	2441	8080	599	1497	1054	2198	8207	862	443	2892	3293	2337	3916	635	129297
'35	1303	141	442	1781	490	4088	1426	1223	2886	2378	1409	2740	388	890	873	1480	3993	524	312	1451	1911	1070	2429	353	77399
Before '35	6145	386	1128	4816	823	11629	3416	4492	8109	5439	4307	8590	858	2247	3310	2951	11683	679	574	3087	6194	2356	9269	854	221108
Unid.*	46	2	8	2018	73	120	14	9	36	613	9	1407	153	139	31	279	200	7	3	87	18	9	160	7	25100
Total	29480	2969	8085	45794	13503	93291	54506	19141	79009	43844	30350	99102	7547	27999	15824	42090	134579	10228	5860	42062	38994	27767	49430	8159	1927833

CROSLEY

Model	Neb.	Nev.	N.H.	N. J.	N.M.	N. Y.	N. C.	N. D.	Ohio	Okla.	Ore.	Pa.	R. I.	S. C.	S. D.	Tenn.	Tex.	Utah	Vt.	Va.	Wash.	W.Va.	Wis.	Wyo.	Totals
6 Mos. '48	19		10	15	17	37	16	2	120	23	45	64		10	32	44	82	13	6	62	14	22	7	9	1388
'47	24	8	11	14	3	105	47	2	200	18	63	94	8	25	8	96	85	13	9	92	25	43	9	2	2021
'46						2				1		5	2			3	1			18	1				54
'45												2				1									6
'44										1		2													5
'43											2														10
'42				1		3	1		6	2	1	2		8		3	5			6	8	4			93
'41				2		14	1		25	1		4	2				1			5	1	3		1	103
'40						1			1	1							1		1					3	23
'39				1					3																9
'38										1		2					1			1				2	8
'37									1											1				1	4
'36									1			1	1				2	1	1						6
'35				1							1		1				1								5
Before '35				2	1	1			1			1	1				1								15
Unid.*			1	1		1				1		3	2	2		1							1		43
Total	43	8	22	36	22	163	65	4	358	47	112	179	14	43	40	148	180	26	17	186	50	72	17	18	3795

* Unidentified as to year of manufacture.

Data from the Reuben H. Donnelley Corp. are as of July 1, 1948.

TRUCKS IN USE BY MAKES, BY STATES

Model		Ala.	Ariz.	Ark.	Calif.	Colo.	Conn.	Del.	D. C.	Fla.	Ga.	Idaho	Ill.	Ind.	Iowa	Kan.	Ky.	La.	Me.	Md.	Mass.	Mich.	Minn.	Miss.	Mo.	Mont.
DIAMOND T	6 Mos. '48	39		44	177	78	63	3	15	58	125	38	887	217	192	156	135	81	8	49	147	152	119	39	97	35
	'47	93	18	92	348	142	163	17	49	177	212	72	1128	325	320	261	180	186	19	87	291	341	216	196	289	81
	'46	64	9	58	241	73	78	8	22	114	84	30	635	165	148	101	84	99	6	38	172	150	115	82	173	53
	'45	40	12	20	113	43	55	3	3	43	22	27	338	106	98	69	79	30	1	21	108	106	73	24	103	26
	'44	18	4	14	67	21	16	2	1	43	9	11	139	49	70	37	18	32	3	11	40	69	27	12	43	14
	'43	3	2		33								9	1	3	7	10	5	1	5	5	3	2	1	5	
	'42	5	2	15	107	13	17	3	5	27	11	25	81	20	58	42	20	51	11	14	74	29	30	34	18	8
	'41	28	9	21	344	72	130	5	15	81	36	30	761	119	147	117	59	120	8	35	277	130	94	32	187	83
	'40	35	8	21	185	79	117	5	2	70	30	29	759	115	213	92	71	89	8	28	194	121	130	53	241	81
	'39	13	3	17	127	71	83	5	5	34	15	25	345	109	160	91	41	62	12	30	183	68	123	15	112	30
	'38	6	6	31	107	76	57	3	7	30	10	30	397	60	105	133	45	34	11	23	119	56	139	8	100	32
	'37	6	9	53	182	171	107	4	7	52	23	50	600	159	174	201	91	62	15	39	197	85	207	4	170	54
	'36	6	7	13	192	147	86	4	12	27	15	38	575	138	150	142	60	32	10	38	123	59	208	14	145	69
	'35		3	8	92	80	67	2	9	28	10	31	350	130	102	117	49	21	8	33	111	28	147	4	79	34
	Before '35	4	4	21	180	87	126	3	12	31	7	13	1023	191	158	163	101	39	29	55	216	58	286	2	243	48
	Unid.*	2	3		15	8	1	2	5	20	10	8	32	5	16	3	24	38	2	101	5	141	4	2	184	
	Total	363	99	428	2520	1161	1166	69	169	835	620	460	8059	1909	2124	1732	1067	981	149	607	2262	1596	1927	423	2189	928
DIVCO	6 Mos. '48	11	12		217	28	62	6	45	18	3	7	260	146	35	20	14	11	17	37	287	239	32		81	5
	'47	21	14		293	60	115	25	106	48	3	11	447	128	68	20	20	23	29	123	333	402	79		206	3
	'46	18	13	1	275	32	99	14	61	33	23	11	349	115	36	24	19	16	34	101	361	247	60	8	225	1
	'45	11	7		137	8	71	6	22	2	6	1	125	44	9	7	10	6	5	42	139	104	1	1	52	
	'44	1	1	1	42		4	1			1		28	9	1	8	5	4			27	17	2			
	'43				41					1						2				22	4	2			1	
	'42	6	1		18	3	8	1	23	22	1		25	51	5	14	1	2	6	30	34	44	3		8	
	'41	7	10		113	8	130	9	22	9	1	2	145	51	12	10	21		3	51	388	135			129	
	'40	6	2		52	3	41	4	56	5	3		122	54	11	2	11	3	7	37	124	110	9		33	
	'39	4	5		71	1	79	3	96	3	1		87	30	11		5	3	3	19	128	24	22		52	
	'38	2	7		28		33	3	50	3	2		60	12	6		5	1	3	16	83	22	17		33	
	'37	1	3		11	2	71	2	14	27		1	90	13	13	5	13	3	4	6	41	22	20	2	34	1
	'36	2			48		10	1	18				116	9	3		9	12	1	7	33	21	80		9	1
	'35		1		12		8	3					42	2			3			3	8	13	85		4	1
	Before '35	2			165		11	1	9				124	6	6	10	6		1		35	37	24	1	16	
	Unid.*				17	1	2			1			2			1	9	2		33	14	140	11		14	
	Total	92	78	2	1540	141	783	76	483	172	44	33	2022	671	216	123	151	86	141	527	2028	1659	421	12	897	12
DODGE	6 Mos. '48	893	237	790	4103	696	447	93	192	946	1219	354	4551	2014	1193	1317	924	720	408	904	1391	3259	1172	747	1719	370
	'47	2349	593	1755	8337	1286	1139	384	475	2569	2782	734	5910	3179	2514	2147	2227	1772	965	2631	2576	4868	2263	1699	2862	979
	'46	2313	466	1829	6683	1156	1402	261	372	2583	2897	677	5968	3219	2413	1813	2071	1884	950	1340	2579	4939	2615	2068	2792	908
	'45	323	129	270	2000	209	246	32	60	498	419	128	964	585	424	410	427	325	161	457	507	790	373	224	668	193
	'44	137	37	149	949	88	91	20	22	127	140	49	292	194	149	132	121	125	78	168	127	280	150	86	133	64
	'43	21	27	16	703	9	2			40	53	30	24	4	26	32	38	11	127	16	27	16	46	35	21	
	'42	1215	309	1198	2306	602	264	111	113	1323	1352	334	1372	696	643	741	734	982	368	96	705	1284	644	999	770	269
	'41	1968	669	1260	7418	1220	1074	163	270	2574	2386	795	3029	1971	1238	1490	1465	1239	615	920	2155	2650	1216	1309	1687	795
	'40	1051	285	715	4082	618	657	112	176	1104	1359	397	2502	1567	948	696	991	762	395	672	1545	1984	958	715	1255	369
	'39	721	224	521	3004	630	627	83	61	730	814	316	2193	1480	1005	685	806	466	385	527	1439	1584	806	366	946	351
	'38	398	127	325	2636	466	407	75	89	531	448	168	1261	769	578	626	578	346	279	349	817	932	528	215	634	233
	'37	635	272	524	4620	873	589	124	41	771	835	311	2121	1841	821	837	1045	492	247	556	1091	1853	965	452	1011	305
	'36	658	423	641	5660	1211	830	117	127	1086	900	601	2706	2209	1212	1355	1200	562	427	466	1277	2297	1402	467	1372	616
	'35	206	226	316	3713	535	581	67	64	459	334	380	1121	1474	650	651	640	177	181	222	689	960	943	134	625	430
	Before '35	307	274	555	7111	835	1100	75	38	680	411	494	1416	1535	763	1224	775	328	438	324	674	1364	1244	255	1161	615
	Unid.*	53	8	24	134	36	3	13	89	103	176	40	107	16	11	61	9	270		199	16	1755	21	76	2243	1
	Total	13248	4306	10888	63659	10470	9459	1754	2189	16124	16425	5810	35556	22863	14576	14421	14045	10508	6008	11174	17804	30986	15316	9858	19913	6517
FEDERAL	6 Mos. '48	17	5	8	36	38	49	1	13	26	21	7	167	84	17	118	85	11	29	35	26	173	94	13	20	24
	'47	64	13	100	145	67	170	3	28	76	48	53	303	123	66	141	148	47	63	122	104	434	262	28	127	47
	'46	83	19	52	192	19	144	4	9	106	130	32	168	102	82	67	61	59	38	82	100	269	98	55	110	8
	'45	19	14	38	78	14	55	1	10	15	14	19	86	63	35	15	25	8	11	47	28	111	76	12	49	2
	'44	12	8	13	34	12	11		2	5	10	3	38	29	4		8	6	12	12	17	44	41	6	10	7
	'43	10	5	2	47	1	1	4		23	19	2	13	6	1	6	9	2		6		1	2	9	3	2
	'42	8	3	7	36	40	29		2	35	33	4	31	12	6	12	21	21		12	31	54	34	10	19	
	'41	5	2	8	61	9	91	1	18	23	19	3	110	26	5	2	15	12	6	35	67	104	40	7	19	3
	'40	2	1	6	47	3	78	1	11	57	7	4	78	23	3		25	8	6	9	68	76	23	3	19	2
	'39	1	2	5	57		41	1	5	18	4	2	74	19	3	6	21	5	5	18	65	88	27		11	2
	'38		1	4	35	4	39		3	15	10	1	65	10	7	2	10		9	6	51	55	27		28	7
	'37	1	1	5	80	7	54		3	18	6	2	104	24	10	9	19	3	5	13	70	96	45	6	43	9
	'36	1		6	104	16	54	1	3	15	18	2	112	23	7	12	14		1	6	56	105	36	3	49	12
	'35		1	2	64	4	47			9	2	1	64	12	4	3	16		2	2	27	89	15	1	29	17
	Before '35	3	7	4	268	18	147	1	5	18	12	8	102	27	12	13	25	2	3	14	99	122	74	5	114	13
	Unid.*	4		1	14			2	1	3	14	2	7	3	6	2	8	25			56	6	197	3	1	49	
	Total	230	79	253	1298	252	962	19	110	462	358	147	1514	586	268	408	520	200	190	475	833	1988	837	159	699	185
FORD	6 Mos. '48	2330	548	2581	6608	2182	965	258	507	1910	3247	735	8323	4204	2866	3657	2512	2403	1028	1665	3231	7094	2801	2323	4063	938
	'47	3700	897	3484	11831	2739	1359	635	680	3935	4707	1191	7844	4340	4077	4514	3667	3265	1484	2291	3631	6378	3999	3243	4854	371
	'46	4474	857	4771	9540	2264	1252	463	464	4973	6410	1033	7367	3399	3758	3415	3227	4185	1275	1396	3314	6737	3373	4713	4036	234
	'45	824	208	949	2849	517	435	51	184	1143	1420	269	1766	1576	1014	847	1033	1014	498	623	888	1999	1078	882	999	290
	'44	421	124	399	1060	277	155	3	51	474	873	156	790	481	453	351	473	489	295	230	379	661	490	535	360	146
	'43	209	118	225	1941	104	35	50	23	160	388	93	555	287	67	132	113	114	24	136	61	85	37	97	104	69
	'42	3144	429	2245	2999	1236	453	286	272	2957	4086	468	2136	1298	1242	1623	1294	2626	788	220	1265	2209	1485	2804	1102	699
	'41	4160	948	4362	11030	2271	1602	379	512	4806	5790	1222	6782	3755	3835	4422	3232	3874	1620	1148	3853	6731	4044	3856	4195	1434
	'40	2802	537	2944	7981	1784	1253	329	382	3381	3707	1018	5581	2965	3115	2887	2123	2986	1256	973	2835	4700	3081	3071	3279	1126
	'39	2050	462	2196	5949	1588	939	205	296	2498	2567	748	4088	2658	2636	2119	1767	2130	1018	769	2301	3360	2282	1812	2386	911
	'38	1145	382	1423	4886	1338	727	209	176	1892	1642	652	3136	1685	1889	2440	1333	1516	780	515	1595	2292	2147	1311	1816	1000
	'37	2218	674	2940	8763	2335	1603	349	255	3229	3086	1127	5252	3763	3047	3999	2748	2400	1489	967	3236	5620	3862	2402	3357	1293
	'36	1859	646	2280	8724	2465	1737	310	253	3124	2998	1165	5158	3678	2822	3446	2117	2118	1245	762	3261	5308	3548	1845	3150	1446
	'35	929	551	1454	9128	1723	1373	209	166	2137	1636	935	3582	3438	2367	2863	1403	1005	947	791	2380	3449	3080	930	2328	1175
	Before '35	3623	2633	7472	45963	7518	7159	882	366	14009	8862	2985	10366	11192	8227	14137	5566	5922	4116	2290	6111	12323	14647	4387	10398	4263
	Unid.*	94	26	85	276	74	28	38	278	523	594	88	293	131	89	145	52	950	11	4230	48	4993	170	223	6963	35
	Total	33982	10040	39810	139328	30415	21075	4656	4865	51150	52026	13885	72619	48673	41525	50997	32660	36991	17874	18997	38389	73939	50122	34418	53410	17430
F. W. D.	6 Mos. '48	1	1	4	41	33	3	1					8	3	8	2		7	1		3	5	2			5
	'47	1	4	4	115	64	41	8		24	1	1	28	1	8	5	2	3	3		22	1	31	4		8
	'46		2		63	41	12	6				2	15		13	5	2	7	9		17	3	41	9	7	7
	'45			4	16	12	1					1	3		5	4		8	9		9	2	11	2	3	1
	'44		1	1	18	28				1					6	10	1	8	6				2	8	1	2
	'43				5	3							2								1	1	1			
	'42		1		25	6	1			2		1	3	1	6	10		6	3	1	4	1	5	2	1	
	'41		2		10	9	4	4					9		3	8		8	9		2	3	12	4	1	1
	'40				6	15	1			1	1		3	1	6	4		13	2		2		1	2	8	1
	'39		1		12	12		1					2		6	3	1	1	3				1			1
	'38				22	6	1					2	6		16	3	1	1	1		15		8	1		1
	'37		1		37	17	3	3		1		2	1		11	10		1			1	1	22		1	11
	'36		3		11	11	4			2	1	2	7		26	6					17		25		8	2
	'35		1		7	1	4								12	1		5			14		13			1
	Before '35		1		39	17	5	1			1	3	22	2	43	3			11		10	2	58		12	4
	Unid.*				2	3	1	3					2	11				1		1		2				
	Total	2	17	13	429	278	88	28		51	3	16	107	20	168	74	7	69	57	2	117	20	239	32	26	48

* Unidentified as to year of manufacture.

Data from the Reuben H. Donnelley Corp. are as of July 1, 1948.

AND YEAR OF MANUFACTURE—*Continued*

Model	Neb.	Nev.	N.H.	N. J.	N.M.	N. Y.	N. C.	N. D.	Ohio	Okla.	Ore.	Pa.	R. I.	S. C.	S. D.	Tenn.	Tex.	Utah	Vt.	Va.	Wash.	W.Va.	Wis.	Wyo.	Totals
DIAMOND T																									
6 Mos. '48	210	8	9	217	34	330	46	58	224	28	50	323	26	22	106	64	211	49	15	61	67	53	116	51	5320
'47	222	14	22	364	59	1046	154	73	426	60	289	892	60	60	120	123	400	55	17	175	207	98	365	61	10675
'46	182	2	15	154	29	600	68	27	206	36	142	372	33	30	53	59	204	22	12	77	111	59	193	32	5440
'45	63	1	2	116	15	308	30	22	139	27	80	350	16	20	29	32	165	1	5	48	69	78	125	20	3274
'44	29		2	68	21	172	12	12	63	33	7	279	19	6	23	3	67	2	4	31	35	29	50	11	1746
'43	3		1	9	2	26			6	1	12	41	1				7	4		1	16	3		2	233
'42	29	10		49	9	214	19	4	58	13	50	112	4	7	7	21	73	6	10	13	82	27	17	4	1565
'41	83	5	5	259	19	1007	29	12	239	39	60	473	36	12	25	31	294	34	17	53	164	72	188	13	5999
'40	71	2	8	216	12	737	37	20	174	32	49	311	33	10	41	40	153	7	11	34	121	73	162	8	5104
'39	43		6	174	21	589	19	13	127	30	37	559	36	5	32	31	118	6	9	20	61	40	127	7	3889
'38	36	3	9	146	22	439	15	28	93	22	48	284	21	8	22	17	117	6	7	14	75	41	146	10	3254
'37	67	13	8	325	37	703	16	42	176	80	79	380	38	5	49	56	172	19	14	16	100	110	239	36	5510
'36	74	11	6	434	13	647	30	53	158	49	66	412	18	5	37	26	93	9	7	26	82	68	189	8	4832
'35	91	1	2	158	3	431	11	49	103	30	59	102	13	4	33	15	49	7	6	13	65	55	114	9	3015
Before '35	148	2	8	439	12	827	14	89	166	25	25	319	21	4	53	16	56	6	16	18	84	39	333	36	5766
Unid.*	6		2	63	3	10	1		1	3	1	54	1				1			1	2	1	13	1	836
Total	1273	72	105	3191	311	8094	501	471	2301	529	1034	5213	374	200	631	540	2097	235	152	614	1340	844	2385	309	86358
DIVCO																									
6 Mos. '48	4		19	148	2	287	29	1	213	22	10	248	75		5	19	74	8	10	33	76	24	57	2	2973
'47	14	6	16	422		593	32	7	357	38	39	807	78	2	7	11	133	23	12	77	95	40	207	3	5813
'46	11	2	11	179	2	309	43	7	304	43	37	378	80	7	11	39	74	22	3	80	82	60	180	4	4164
'45			6	117		123	9	1	133	4	13	232	25	1	5	4	58	6	2	32	28	26	34	1	1756
'44	1	4		7		10	2		9	2	16	58	1			1			1	15		2			273
'43				22		3						4											1		103
'42	2		2	35		34	8		35	12	7	32	14	3	3	2	6			19	5	5	22		550
'41	1		15	211		211	30	1	215	8	14	285	47	10	4	15	31	2		58	69	27	33		2573
'40	11		5	172		345	21	1	106	2	9	147	57	10	4	13	13		2	32	24	20	35		1728
'39	3		3	99		285	16		126		3	149	31	2	3	11	38	4		21	44	7	34		1500
'38	3		2	61		303	26		66			117	12	6	2	9	18	1		22	20	9	26		1148
'37			3	31	1	184	25		53			80	7	2	1	7	49			10	11	10	40	1	922
'36	1		3	69		82	13	1	66			44	1		3	8	17			15	2	6	9		723
'35			2	19		33	2	1	11			8	9	1	2	7	1			10		2	5		268
Before '35			5	39		60	6		40		1	13	8			7	1			9	25	15	22		705
Unid.*	1			65		6				1		20	2			1	1			1	3		1		340
Total	52	12	92	1703	5	2958	264	20	1736	132	143	2820	447	44	50	151	534	68	30	435	484	247	706	11	25337
DODGE																									
6 Mos. '48	900	90	217	1250	281	2350	1631	389	3052	963	796	2707	179	641	664	1047	3021	292	183	1044	916	617	944	260	55093
'47	1451	236	470	3036	681	8180	3335	819	5940	2468	1920	8218	486	1583	1136	2383	8130	534	464	2701	2084	1607	2492	487	119215
'46	1240	212	431	2662	698	8084	3033	724	5772	2173	1669	8955	496	1552	873	2597	7521	438	436	2139	2080	1849	2345	385	114542
'45	250	38	105	436	106	1243	483	184	1427	642	277	1085	109	277	192	299	1439	59	97	601	331	348	389	85	21359
'44	94	11	18	117	41	430	194	73	382	208	99	559	27	94	62	141	591	29	29	169	160	137	169	42	7692
'43	9	9	5	27	8	77	13	18	113	47	69	58		23	13	45	102	6	12	17	91	26	9	3	2191
'42	379	85	97	861	334	2318	1431	327	1745	1182	1080	1795	105	843	272	1320	4239	263	126	912	1680	728	529	214	42504
'41	621	171	300	2107	637	4982	2552	498	3826	1899	1892	3890	227	1386	424	1677	6373	384	320	2344	2276	1392	1337	364	84425
'40	425	97	278	1423	266	3547	1848	388	2780	1002	890	3310	183	667	317	1036	2847	277	234	1208	1185	977	1104	157	52801
'39	389	69	295	1395	227	3640	1210	269	2386	700	557	3239	252	488	285	737	2039	239	183	858	923	788	953	183	43082
'38	265	40	207	1095	147	3090	573	188	1577	558	314	1830	114	280	182	598	1497	106	134	576	691	517	677	108	29057
'37	356	94	226	1616	258	3397	889	326	2895	850	896	4185	229	447	285	895	2033	246	205	787	1250	768	1257	199	47890
'36	675	127	279	1939	274	4370	1109	380	3422	1099	1350	4385	275	489	378	1090	2398	443	222	931	1876	1174	1779	214	60573
'35	334	63	135	811	139	2205	604	274	1593	588	780	2211	155	210	252	442	887	232	112	499	1018	504	969	140	30802
Before '35	700	126	242	1344	148	3577	564	428	2073	769	1145	2935	286	301	418	537	1235	214	153	533	1819	730	1322	184	40990
Unid.*	14			578	22	53	13	7	23	223	38	693	53	49	19	130	490	3	5	24	4	2	96	3	9328
Total	8082	1466	3306	20697	4267	51303	19453	5292	38783	15370	13692	51131	3159	9330	5772	14903	44433	3782	2915	15341	18264	12162	16373	2988	766124
FEDERAL																									
6 Mos. '48	12	2	6	84	10	246	41	32	147	16	48	151	3	8	32	55	35	15	10	41	17	53	33	3	2222
'47	74	1	13	192	31	436	185	42	419	59	130	575	10	43	49	165	152	19	21	152	37	134	115	13	5728
'46	27	1	9	157	28	419	118	7	337	42	84	371	8	25	10	135	127	18	19	77	51	122	93	4	4104
'45	16	4	10	135	2	251	42	1	173	55	103	173	3	7	2	47	49	9	2	48	17	55	60		2124
'44	4	1		47	6	102	25	2	68	9	46	65	3	3	3	33	13	7		11	5	18	18		832
'43	5			12		11	11		10	1	32	6		12		25	14			3	22	4	5	2	349
'42	5		1	48	2	68	18		43	29	61	24	1	12		37	17	8	1	9	25	19	8		882
'41	11	2	6	110		167	10	5	85	10	85	83	9	3		42	29	4		24	29	13	13		1387
'40	2		5	105	1	105	5	2	72	7	47	61	17	5	1	43	5	4		9	18	19	9	2	1160
'39	3		6	75		109	10		69	9	28	91	8	8	2	33	7	2	1	14	8	11	13	1	932
'38	3		2	69		73	4	2	61	4	27	41	19	3		29	7	1		8	9	10	13		778
'37	6	1	3	70		123	5	3	56	12	30	49	19	3		33	6	2	3	6	20	17	16		1130
'36	14		2	73		153	6	3	61	13	72	85	25	1	3	40	18	4	2	15	20	24	18	3	1291
'35	6		2	78		86		3	29	6	36	22	13	1	1	22	7			2	11	4	19		727
Before '35	13		5	155		261	4	5	61	10	129	93	28	5	6	41	17		6	15	50	10	48		2132
Unid.*		3		33	1	15	4	1	9	4	34	21	3			13	3	1		4	1	1	1	1	360
Total	181	15	70	1482	84	2709	489	108	1701	276	1015	1953	239	149	108	732	495	94	68	439	331	514	479	29	28578
FORD																									
6 Mos. '48	2150	171	504	2854	709	3472	3620	1145	6771	2934	1452	5218	317	1533	1299	2769	8388	712	559	3071	1730	1202	1982	609	124764
'47	2276	245	648	3854	905	8469	5438	1480	8102	4081	2124	9104	684	2565	1394	3603	12390	835	693	5021	3321	2191	3496	695	173562
'46	1964	239	582	3637	970	8181	5232	1164	6347	3685	2103	8288	599	2932	934	4095	13904	778	565	3837	3135	2330	3717	653	167800
'45	635	44	179	987	206	2643	1760	252	2743	1533	458	855	165	706	287	710	3887	158	154	1263	732	617	753	186	45228
'44	294	11	78	493	84	821	710	130	636	534	288	164	71	353	150	286	1535	120	79	482	307	280	483	94	18819
'43	65	41	19	244	31	120	259	37	126	302	225	211	27	145	44	88	763	128	10	102	234	123	48	27	8060
'42	960	179	168	1089	493	2221	2897	708	2291	2214	1468	4473	203	1742	491	1754	8084	534	163	1417	1819	984	1204	391	77307
'41	2245	317	716	4087	1075	7978	5452	1683	7993	4468	2502	8105	736	2928	1195	3951	15296	902	614	3993	3515	2597	3503	710	176205
'40	1700	204	669	2834	793	6064	3390	1265	5637	3559	1731	6657	622	1981	955	2476	10805	712	436	3027	2095	2079	2799	503	128891
'39	1347	166	549	2019	595	4629	2560	948	3926	2893	1211	4271	527	1509	762	1857	7831	552	397	2260	1600	1484	2002	429	96067
'38	1192	100	397	1955	462	4023	1961	981	3029	2551	951	3141	337	959	647	1257	6283	406	265	1629	1195	950	1840	319	74557
'37	1800	226	745	3429	826	7699	3209	1326	6907	3834	2220	6918	760	1870	927	2276	9979	788	560	2665	2895	2248	3613	513	138256
'36	1890	221	699	3582	689	8111	2417	1169	6305	3385	2237	7227	670	1439	936	2029	8169	832	539	2303	3482	1973	3525	555	129649
'35	1473	184	577	2721	430	6091	2045	1183	4194	2606	1682	4735	492	1003	914	1212	4987	628	426	1976	2446	1243	3069	411	96712
Before '35	9111	882	2672	9971	1417	22575	6487	4718	16402	9081	7187	17611	2305	5606	4534	5057	23259	1923	1533	5643	12051	4535	15830	1467	407268
Unid.*	53	4	8	2705	59	98	50	7	148	498	98	1317	128	199	33	210	228	7	1	80	18	12	88	10	26512
Total	29175	3234	9210	46461	9744	93195	47487	16174	81657	48108	27947	88296	8853	27488	15482	33531	136148	9981	6907	38789	40575	24838	47952	7573	1889857
F. W. D.																									
6 Mos. '48	4	2		25	3	33	1	1	8	7	5	6				1	5	6		3	8	7	6	2	259
'47	11	12		23		116	5	3	31	4	28	78		22	1	8	28	2	4	4	17	73	78		923
'46	8	2	1	8	5	118	4	1	23	8	8	78		2		8	21	10	4	2	10	44	106	1	735
'45	4	2	1	5	2	100			10	49	5	9	2				14	13	3		7	3	36	2	360
'44	1		1			3			5	7	1	1					14	2		2			17	1	145
'43	2					4												2		1			3		26
'42	2			1	1	12			5	2	13	19	3		1	7	5	1	1	8	7	32	2		201
'41	3	2		2	2	30			5	4	5	47					13	10		1	33	52			296
'40	4			2		28			3	5	6	1					12	1		8	10	36	1		178
'39	1			1	2	33			4	2	8	2				1	1	4	1	1	15	51			175
'38	2	3		5		20	1		6	2	4					5	7	6		1	5	17			177
'37	8	3		4		20	1	1	3	1	41	25	1			19			1	35	15	43	3		321
'36	2	6		6		32			6	1	2	3		1		8		1		3	3	62	1		265
'35	2	2		4		18			1	1	1			1		6	1			7	1	59			165
Before '35	12	5	1	3		91	2		5	2	17	9		4	2	16		2	1	27	7	112	3		555
Unid.*	2					25				1				1						1	2	11	2		70
Total	68	39	4	89	15	679	13	5	113	98	100	292	5	31	4	26	170	57	17	11	141	225	730	18	4853

* Unidentified as to year of manufacture.

Data from the Reuben H. Donnelley Corp. are as of July 1, 1948.

TRUCKS IN USE BY MAKES, BY STATES

Model		Ala.	Ariz.	Ark.	Calif.	Colo.	Conn.	Del.	D. C.	Fla.	Ga.	Idaho	Ill.	Ind.	Iowa	Kan.	Ky.	La.	Me.	Md.	Mass.	Mich.	Minn.	Miss.	Mo.	Mont.
G. M. C.	6 Mos. '48	718	195	604	2719	610	372	92	206	496	739	317	2408	1186	695	939	806	529	368	547	913	2023	656	593	1139	268
	'47	975	287	735	4753	649	506	206	315	980	919	325	2584	1583	773	908	832	560	354	721	948	1978	820	757	1509	347
	'46	592	140	540	2797	333	287	137	132	658	669	196	1268	612	499	497	630	416	261	522	775	1219	461	616	792	208
	'45	232	117	253	1313	194	198	54	50	318	197	100	424	324	280	234	240	155	101	211	232	637	199	209	277	94
	'44	224	40	104	527	87	94	32	76	153	100	61	364	220	99	114	115	89	89	72	189	355	156	111	186	72
	'43	89	29	56	623	28	6	27	3	42	36	32	32	34	22	22	49	29	24	62	28	27	25	80	43	35
	'42	932	137	592	1419	575	180	72	90	823	695	293	733	654	420	540	518	430	331	93	404	651	515	871	489	267
	'41	971	221	716	4684	665	761	111	238	704	885	382	1958	1248	619	1034	894	508	323	421	1343	1537	800	892	1059	407
	'40	546	159	520	3230	489	572	87	151	498	621	258	1596	987	438	655	645	348	223	299	867	1018	735	584	866	280
	'39	278	115	293	2688	345	390	91	133	336	417	177	953	809	287	527	416	299	147	239	756	650	476	291	745	184
	'38	184	70	189	1724	197	240	53	103	223	266	102	573	315	159	442	303	212	108	114	387	337	236	224	332	114
	'37	312	201	418	3097	637	584	78	110	487	389	306	1332	1037	402	1083	813	210	219	204	841	946	603	349	837	259
	'36	81	63	185	1848	301	326	46	62	222	155	198	647	491	225	398	330	97	123	114	484	508	392	130	432	112
	'35	24	24	49	639	57	130	12	11	47	36	27	169	123	35	76	63	25	20	26	132	155	75	26	78	35
	Before '35	36	44	46	2104	160	355	19	39	55	52	68	327	258	108	298	126	55	42	85	286	229	240	60	282	84
	Unid.*	29	6	20	81	29	2	15	44	60	89	30	88	12	13	31	24	126	2	874	10	827	11	39	1218	1
	Total	6223	1848	5320	34248	5336	4993	1132	1763	6102	6225	2872	15457	9893	5074	7798	6804	4058	2735	4604	8597	13094	6400	5832	10344	2747
INDIANA	6 Mos. '48				2					1	2		3	3	1		3	1	1			17	1		1	
	'47	1			3		1				4	1	4	4		1		1		1	2	25	1			
	'46	1			3						1	1		4			4			1	3	11			2	
	'45	1	2										2								4	4				
	'44													1								2				
	'43										1									1						
	'42	1			3												1	1			1	2				
	'41	1				1	1				3	2	4	3	1		1			3	1	8				1
	'40	1			3		1			2	8		3	4	1		2				10	11	2	1		
	'39	1			7	1	2			2	3		3	4		1					9	3	1	1	1	
	'38				15	1	10		4	4	10		5	5	1	3	6	1	1	1	12	4	3	2	3	2
	'37	1			38	2	33	1	2	8	14	1	16	26	5		14	10	1	1	19	7	7	1	5	2
	'36	2	3		65	5	18	1		7	10	2	46	6	3	4	28	3	2	6	16	5	13	3	15	2
	'35	1	2		37	20	6			3	4	1	13	2	2	1	6	2	2	3	14	5	10		5	1
	Before '35	1	2		58	10	13	2		9	7	2	35	22	1	2	11	2		4	16	7	3	1	14	5
	Unid.*							1			5						1	2		7	1	7			1	
	Total	12	9		234	40	77	5	6	36	72	10	134	78	15	12	77	23	7	28	107	118	41	9	47	13
INTERNATIONAL	6 Mos. '48	1119	209	868	2775	1217	708	127	295	742	1192	456	6475	3164	2068	2156	1419	935	577	992	1536	2238	1632	792	1975	612
	'47	2066	413	1599	6564	1769	1354	362	396	1826	2345	882	7454	3950	3480	2774	2206	1983	975	1444	2353	3076	2902	1567	3352	1148
	'46	2123	351	1606	4869	988	1008	215	283	1773	2110	580	5371	2790	2375	2021	1815	1637	837	1016	1976	2402	2583	1485	2503	806
	'45	431	191	367	1542	297	309	73	42	403	505	210	1960	1378	813	487	706	420	279	414	759	917	503	417	879	230
	'44	291	132	270	1101	166	182	43	24	243	295	120	973	548	387	354	288	223	139	189	331	417	284	201	370	126
	'43	39	47	69	672	30	16	31	1	67	55	45	93	73	27	42	28	45	16	117	36	37	23	41	27	68
	'42	971	153	767	1379	371	283	75	72	984	740	300	1355	611	665	607	592	758	359	132	489	535	743	802	418	251
	'41	1334	333	1101	4413	1005	1344	202	292	1496	1690	739	5663	3255	2539	2307	1739	1386	541	937	2115	1988	2258	1160	2232	982
	'40	1058	265	879	3609	916	1059	145	91	1114	1257	592	4433	2488	2274	1746	1450	1211	416	642	1385	1673	2223	1045	1898	870
	'39	1027	223	895	2646	658	878	157	131	885	1172	489	3711	2240	1695	1198	1222	1230	337	448	1423	1075	1720	1034	1535	710
	'38	457	201	547	2573	609	739	98	115	706	602	427	2897	1446	1385	1617	1136	780	290	358	838	705	2784	645	1287	789
	'37	494	283	429	3183	929	720	116	121	796	499	635	2912	1952	1700	1598	1086	611	159	438	799	756	689	588	1388	615
	'36	647	254	646	2794	965	794	111	66	765	788	672	2883	1592	1403	1512	1112	771	283	332	830	868	1357	785	1210	728
	'35	276	198	353	1965	506	567	46	39	395	334	394	1545	1104	894	907	598	359	127	236	380	565	1008	381	794	737
	Before '35	232	151	237	3221	478	827	73	34	390	298	347	2111	1316	1611	2063	651	421	219	335	649	629	2038	257	1016	1171
	Unid.*	57	7	40	91	59	6	20	68	105	155	48	239	84	29	69	17	470	5	1402	25	1264	35	91	2850	1
	Total	12624	3411	10673	43337	10963	10794	1894	2070	12690	14037	6914	50075	28001	23345	21458	16065	13240	5553	9435	15904	19145	22782	11291	23534	9646
KENWORTH	6 Mos. '48		3		39							12													3	2
	'47		5		161	17						18				1									8	16
	'46		7		158	13						20												1		13
	'45		15		88	11						23		1										1		14
	'44		1		52							7								1						
	'43				11							4														1
	'42	1	2		20	2						8														6
	'41	3	6		65	2						11								1	3	1		1		3
	'40		2		38	3	1					6	1								2					5
	'39	1	3		33	1						8	2													6
	'38	1	1		21	1						3	3													
	'37	2			31			1				9	1									1				1
	'36	2	2		17	4					1	5														
	'35		1		10							3														
	Before '35				21						1	4								1					1	3
	Unid.*											4														
	Total		41	17	765	54	1	1			2	145	7	1		1				3	5	2		3	12	70
MACK	6 Mos. '48	55	6	15	134	24	104	11	31	97	72	21	340	89	67	18	37	44	40	117	250	89	119	45	48	7
	'47	118	10	53	379	68	354	36	52	326	196	27	495	176	182	54	129	179	113	191	644	187	225	148	259	17
	'46	65	11	14	144	7	122	10	9	240	110	7	164	63	87	16	79	92	48	88	241	60	79	50	52	7
	'45	51	8	13	126	22	91	11	14	140	119	11	141	70	113	20	15	67	35	79	272	77	119	40	61	6
	'44	45		4	95	16	47	8	15	201	84	12	129	35	35	10	3	36	33	46	164	27	32	10	49	3
	'43	7			16		10	3	1	9	9	1	20	9			4	4	3	18	25	8	35	3		
	'42	75		8	160	15	71	9	156	284	83	3	128	57	25	8	63	72	32	51	176	36	65	39	99	1
	'41	78	9	14	429	33	450	25	129	365	118	7	294	124	31	21	112	57	59	157	645	59	193	28	287	4
	'40	68	13	20	410	18	310	11	72	99	81	11	313	87	46	29	85	42	56	135	488	48	85	33	112	2
	'39	28	3	13	299	13	187	15	19	97	47	6	276	68	37	13	39	33	36	93	343	46	81	11	101	1
	'38	2	5	4	242	15	128	5	8	73	97		133	32	16	12	40	27	26	36	228	19	63	5	65	
	'37	21	8	4	229	28	285	7	8	52	34	7	186	50	22	12	46	20	15	59	207	38	43	8	71	2
	'36	1	1	1	168	12	156	5	8	22	12	5	93	29	21	10	34	19	11	32	130	38	53	1	81	1
	'35	2		1	74	1	41	2	1	17	1	1	40	18	11	3	5	2	9	11	74	14	19	1	15	1
	Before '35	15	15	6	908	26	317	12	29	54	38	14	821	85	60	30	97	55	56	145	522	142	172	18	213	13
	Unid.*	3		2	8	3		6	23	18	13	1	17	1			7	42	2	87	8	140	3	5	74	
	Total	634	89	172	3821	299	2675	176	575	2094	1114	134	3580	993	753	256	795	791	574	1345	4417	1028	1386	445	1587	65
PACKARD	6 Mos. '48	7	5	25	29	4	12	5	2	12	22		21	6	1	3	11	10	1	8	3	35	24	14		1
	'47	4	27	12	39	2	7		3	3	8		17				1	5		15		20	1	5		1
	'46		13		34		3	1		1	1		13	1	1		1	3	2	6	1	8	2	3		7
	'45										1	1								1						
	'44										1		1							8						
	'43	1	1		10						1									19		1				
	'42	13	2	10	10	4	13	4		4	11		12	1	1	1	9	6	3	7	8	8	3	2	1	
	'41	14	6	19	48	9	21	5	1	18	24	1	30	8	1	6	16	9	4	25	9	23	7	13	2	2
	'40	17	7	26	47	11	17	5	3	17	9	1	19	2		5	18	8	4	17	6	23	9	23	6	4
	'39	10	5	20	35	5	12	3		17	17		21	5		10	16	12	7	33	2	10	5	19	1	
	'38	3	1	14	53	5	14	5		11	13		11	2		13	15	7	9	25	7	14	6	7	1	2
	'37	19	4	9	50	11	21	6		39	31		25	9	8	21	31	10	8	21	15	27	14	14	9	6
	'36	11	2	9	44	6	13	2	1	19	15		23	15	1	21	10	7	10	9	12	19	12	3	8	3
	'35	2	1	3	33	4	9	3		10	8		11	5		12	7	3	3	8	11	7	4	3	8	2
	Before '35	14	16	38	408	75	96	16	4	39	46	7	87	80	38	58	45	9	32	11	62	35	110	6	64	19
	Unid.*				4	1		4	4	3	3	1	1	1	1	1	1	1	1	53	1	56		4	15	
	Total	114	90	185	844	137	238	59	18	193	211	10	292	135	52	155	181	90	84	266	137	286	197	116	115	47

* Unidentified as to year of manufacture.

Data from the Reuben H. Donnelley Corp. are as of July 1, 1948.

AND YEAR OF MANUFACTURE—*Continued*

Model	Neb.	Nev.	N.H.	N.J.	N.M.	N.Y.	N.C.	N.D.	Ohio	Okla.	Ore.	Pa.	R.I.	S.C.	S.D.	Tenn.	Tex.	Utah	Vt.	Va.	Wash.	W.Va.	Wis.	Wyo.	Totals
G. M. C.																									
6 Mos. '48	545	79	101	1418	193	2235	648	244	2325	667	982	1716	97	360	396	941	2233	356	201	595	764	603	546	110	38490
'47	671	66	138	2184	321	3566	718	242	2913	952	696	4467	202	491	345	1116	3266	311	175	877	883	730	1059	135	51850
'46	223	57	110	706	206	2181	494	120	952	481	419	2509	84	349	195	871	1357	233	92	493	453	459	639	77	29031
'45	121	11	32	1038	58	1284	229	40	691	283	355	954	61	187	98	254	859	119	32	227	330	412	278	60	14838
'44	94	5	17	445	49	502	124	22	537	163	168	618	15	99	44	132	423	101	26	143	252	158	154	25	7985
'43	8	6	7	50	14	177	40	9	52	50	145	163	3	42	6	55	248	19	18	31	191	85	22	11	2935
'42	398	67	54	626	221	1731	542	158	1054	574	1054	515	74	389	239	748	2432	166	88	472	1084	624	429	117	26560
'41	432	94	91	1536	341	3251	784	380	2091	875	1135	2557	239	437	280	1159	2794	306	155	622	1348	820	1032	194	46314
'40	300	78	119	1113	227	2704	489	205	1483	598	834	1804	157	290	210	882	1553	181	134	494	960	606	663	114	32830
'39	249	38	106	721	170	1864	339	136	1041	430	530	2250	137	189	131	527	1001	147	96	345	602	295	551	96	24054
'38	120	53	62	537	112	1263	193	76	578	301	355	882	118	93	62	340	595	87	50	206	396	271	279	42	14256
'37	286	59	101	922	230	2520	483	165	1501	759	660	1526	183	207	134	516	1326	210	141	438	949	555	829	136	30550
'36	177	28	77	435	78	1415	175	127	605	273	360	1087	139	81	84	219	408	101	80	188	560	280	467	37	15451
Before '35	183	22	35	475	20	1149	36	133	264	107	216	439	82	26	61	87	128	47	24	63	394	98	271	23	9841
Unid.*	29	1	2	403	11	45	4	5	27	73	5	330	34	17	15	90	34	5		13	1	1	22	3	4852
Total	3894	669	1064	12793	2264	26420	5292	2121	16260	6597	7993	21935	1674	3282	2336	7997	18715	2406	1324	5250	9310	6070	7355	1188	353706
INDIANA																									
6 Mos. '48	1		1			29			1	1		3	1		1	1				1				1	77
'47	1		2	5		10			2			4				1	2			2	1			1	80
'46	1			3	1	5			2	1		1									2				47
'45			1			1				2			1												20
'44		1										3		1									2		9
'43			1			1						2											1		6
'42			1			1			2																13
'41			2	3	2	9			1			9					1								58
'40				2		14			30		1	5		2			3	1	1	1	3			1	113
'39	1		2	4	1	10	1		40			19	2			1	3		1	1	2	7			134
'38	1		3	9		31	3		44	1	1	7			1	1	7			5	7		5		219
'37	2		6	25	1	195	6		65	3	2	38	2	5		3	16		3	2	20	1	1	1	605
'36	4		3	30	2	171	5	1	64	6	5	47	37	4	4	1	12			3	43	7	5		731
'35		2		18		33	3		18	5	2	10		1		1	5			5	7	3	2	2	257
Before '35	3	1		34	11	95	3		35	5	5	60	5	3	1	1	6		5	4	27	10	8		549
Unid.*				12		2			3	1	2	3				1	2						1		52
Total	14	2	24	165	18	607	21	1	307	25	18	211	48	16	7	11	57	1	11	24	112	28	26	6	2970
INTERNATIONAL																									
6 Mos. '48	1388	81	181	1684	316	2927	1317	916	4395	1496	1038	3191	215	415	1117	1151	4014	391	311	1030	1061	550	1189	379	67032
'47	2021	171	432	2822	574	6448	2209	1110	5711	2802	1559	8761	489	874	1214	2507	7620	447	423	2162	2071	1237	3149	493	115526
'46	1274	140	325	1903	425	4746	1912	837	4267	1658	1040	5316	372	672	799	2189	5199	406	331	1615	1505	992	2247	391	86251
'45	423	46	84	724	115	1674	451	200	1488	713	678	2066	144	130	252	432	2086	145	137	459	738	538	840	150	29045
'44	368	17	43	256	64	676	229	70	621	453	520	1173	79	92	154	239	1004	81	45	170	333	241	414	74	15113
'43	20	15	7	44	25	97	62	18	52	123	204	363	8	60	10	88	268	16	17	15	250	44	38	10	3600
'42	404	87	69	554	165	1523	629	257	1181	648	789	986	90	315	237	922	1711	165	85	374	1081	406	603	102	27775
'41	1444	150	271	2223	437	5388	1553	1270	4291	1916	1456	5577	405	618	964	1675	4826	411	259	1183	2134	1255	2069	420	85256
'40	1085	98	202	1734	332	4806	992	1112	3275	1312	1097	3514	335	555	777	1359	3395	368	255	872	1654	1075	1944	412	67199
'39	938	51	211	1431	283	3770	948	685	2422	1016	682	4513	215	464	622	1425	2649	311	241	630	1268	764	1326	323	55930
'38	783	67	131	1191	272	3272	698	755	2056	1131	602	2563	130	337	470	803	2408	251	147	468	1201	589	1050	223	45630
'37	826	76	92	1502	284	3311	903	631	2504	1354	786	3218	133	320	512	858	2858	344	105	561	1558	796	1343	306	48476
'36	901	77	156	1124	255	3170	572	553	2319	1227	791	3239	173	354	379	1044	2562	334	147	483	1308	764	1233	283	47616
'35	651	33	74	698	165	1885	407	534	1456	716	498	1089	68	192	391	524	1418	216	115	316	800	433	874	190	28453
Before '35	1194	46	141	990	127	3069	252	1953	1455	854	468	2024	231	105	1042	315	1221	149	115	306	1067	382	1131	242	39662
Unid.*	51	1	2	831	19	47	13	12	24	236	4	595	47	24	24	220	113	5	3	31	10	4	98	3	9062
Total	13771	1156	2421	19719	3858	46818	13147	10913	37537	17655	12212	48188	3134	5727	8964	15552	43352	4070	2736	10675	18039	10070	19448	4033	772226
KENWORTH																									
6 Mos. '48	2	1			1					1	40														
'47		3			4					1	51					1	5	4			19			6	139
'46	1	10			8						46	1					9	18			113			6	431
'45		4			7	1		1			67	2					16	20			19			1	334
'44		6			1						17	1					1	15		1	36			5	313
'43	1	4									3							13			12				111
'42	1	3				1			1		13	1									7				31
'41		5		3	3						26							3	1		33			1	97
'40		1		1							24	1						9			62	1			205
'39		1							1		13						1	7	2		79			1	175
'38				1							9							2			38		1		110
'37									1		7							1			26				67
'36		1		1							21							1			55				93
'35											14							5			53	1		1	113
Before '35			1								49		6					2			20	1			81
Unid.*			1										5								273				360
Total	5	39		3	26	5		1	3	2	420	6	11			1	32	101	3	1	825	1	3	20	2638
MACK																									
6 Mos. '48	48	2	14	354	12	711	327	15	241	20	75	551	27	31	9	65	142	25	13	63	58	108	53	10	4854
'47	132	1	106	825	37	2616	376	40	770	102	264	1648	50	136	34	159	461	40	60	174	179	203	150	14	13195
'46	42	1	45	269	24	792	254	7	164	21	56	485	25	66	16	95	115	9	25	55	79	50	29	2	4592
'45	22	3	35	379	33	882	197	2	236	24	63	582	27	73	17	55	193	13	31	59	58	96	48	7	4856
'44	8		25	241	5	423	154		138	33	23	435	22	76		44	125	15	11	30	23	57	23	13	3083
'43	1		1	40		124	13		21		2	100		4	1	4	7			1	3	3	3	1	514
'42	3	1	19	157	7	585	130		156	72	76	377	21	100	1	31	132	1	6	102	38	48	27	5	3812
'41	21	10	64	903	9	2274	199	6	418	80	92	1321	100	97	2	78	213	26	18	144	165	93	76	3	10128
'40	7	6	36	655	3	1739	85	2	292	51	92	626	80	39	2	71	150	21	21	44	137	43	86	2	6974
'39	4	5	35	578	3	1730	73	3	236	25	65	804	55	29	3	36	118	11	14	60	74	38	34	3	5941
'38	2	5	31	408	1	1103	38		131	23	25	302	33	7	3	5	64	12	4	53	36	13	38		3618
'37	14	4	11	451	8	1366	38	1	123	20	78	376	36	16	3	11	80	14	2	47	83	23	48	2	4315
'36	7	3	16	356	3	851	15	4	80	28	62	277	28	7	2	6	28	9	3	14	58	10	29	3	2885
'35	2		8	153		590	8		20	7	6	59	10	1	1	5	5	2	1	5	7	8	11	9	1282
Before '35	18	7	22	1254	5	5717	17	3	75	30	91	520	100	12	3	35	56	27	21	32	146	10	74	4	12142
Unid.*				180	1	30	1		3	19	4	99	5	1		9	6		1	2	2		2		826
Total	331	48	470	7203	147	21533	1935	83	3114	555	1074	8562	819	695	97	709	1895	225	235	887	1157	806	729	70	82977
PACKARD																									
6 Mos. '48	2			2	1	8	26		3	1	12	21	7	7	1	7	1	1		36	2	15	5		500
'47		1		1	1	6	3		2		4	3	1	1	3	3	3	6		10	1		1		220
'46		1		2	2	5	1				1	6		1	3	1		1			1				126
'45				1		8						1													12
'44						1						2	1							3			1		15
'43	1			1	1	8	11		3		1	2	1	4			3	1	2	4	3	9	3		37
'42			1	6	2	19	38		7		2	16	1	1			1		2	43	10	13	17		208
'41			1	57		38	22		3		5	21	3	18	1	1	4		2	21	15	17	8		531
'40	3			7	1	10	28		8	3	3	5	3	10	1	2	4	1	3	21	15	17	8		523
'39	2			12	1	10	12		1		4	5		1		5	5	1	6	29	5	8	7		382
'38	2	13		13	1	23	36	1	14	14	9	22	1	20	2	11	19		4	35	19	19	9	3	698
'37	4			6		21	19		9	4	4	7	1	12	1	5	12	1	2	23	7	7	19		439
'36	3		2	8		16	8		5	3	4	4		2		4	4	1	3	16	6	7	10		268
'35	19	4	11	47	2	206	15	7	54	43	54	75	16	18	21	25	48	5	17	45	94	29	78	5	2353
Before '35				7	2	1				3		11					3			2			5	1	191
Unid.*	38	19	15	170	14	459	219	8	109	71	106	215	36	105	33	64	109	19	42	299	168	139	174	9	6892
Total																									

* Unidentified as to year of manufacture.

Data from the Reuben H. Donnelley Corp. are as of July 1, 1948.

TRUCKS IN USE BY MAKES, BY STATES

Model	Ala.	Ariz.	Ark.	Calif.	Colo.	Conn.	Del.	D.C.	Fla.	Ga.	Idaho	Ill.	Ind.	Iowa	Kan.	Ky.	La.	Me.	Md.	Mass.	Mich.	Minn.	Miss.	Mo.	Mont.
PLYMOUTH																									
6 Mos. '48	21	4	4	8	16	1	2	2	12	12	5	23	4	4	5	4	9		8	15	199	12	12	3	3
'47	39	27	13	234	52	12	5	1	26	10	1	28	9	10	15	9	11	8	38	10	107	21	28	11	7
'46	12	26	2	111	18	3	1	4	13	6	1	16	6	7	8	13	13		14	9	43	12	38	3	6
'45	1			3	5		1		3			1		1	9				12	1	2				
'44	1		1	7				1	1						1				6				1	1	
'43			1	12			1		2	1		1		1	1	3			7						
'42	23	5	11	48	14	3	7	1	17	7	5	9	7	3	4	5	14		9	8	11	17	17	4	2
'41	119	84	163	732	156	139	27	42	275	122	58	372	332	199	192	151	121	75	74	188	331	175	101	186	57
'40	118	85	153	665	159	115	29	32	246	130	62	375	311	197	180	166	126	66	99	188	278	185	100	240	72
'39	113	60	110	635	142	109	30	27	188	91	54	372	299	206	152	139	84	73	91	141	205	188	88	196	93
'38	87	25	91	526	105	69	24	5	168	62	46	260	185	98	184	83	78	29	49	47	106	125	56	142	55
'37	120	102	229	935	223	154	29	12	294	152	101	532	472	266	335	257	137	77	83	130	277	325	172	276	87
'36	96	36	132	237	70	60	14	4	195	133	20	101	133	71	98	68	111	25	31	36	89	100	86	103	33
'35	62	19	92	195	47	29	6	7	139	64	11	35	81	12	61	26	37	27	17	15	28	49	39	60	24
Before '35	112	71	244	1,530	165	156	16	3	357	148	34	74	289	56	224	128	92	65	27	96	101	206	70	216	77
Unid.*	2	2	1	7	3	1	6	9	22	15		1	3		1	4	29		169	1	151	2	12	257	
Total	904	548	1247	5103	1177	681	197	148	1952	955	389	2203	2853	1123	1470	1054	956	465	745	805	1926	1417	819	1698	473
PONTIAC																									
6 Mos. '48	5	3	4	16	16	5	6	1	12	3	1	10		2	9	2	6	2	3	11	33	10	11		5
'47	50	4	15	157	41	9	22	1	17	12	1	10	4	14	8	14	7	1	9	16	35	9	10	4	9
'46	18	4	1	77	16	8	9		8	7		7	6	3	3	15	4		6	4	21	17	5	1	3
'45										2		2	2						4		1		1	2	
'44			1	4			1						1			1					11				
'43	1	1	1	14			2					1													
'42	12	3	2	30	12	3	3		18	7		1	7	4	7	3	7	2	3	3	6	4	4	2	5
'41	14	4	6	104	21	6	13	3	10	11	2	3	2	3	7	13	14	1	5	6	22	10	12	3	3
'40	14	4	4	127	17	4	11		18	15	1	10	6	4	2	2	17	1	7	8	11	5	10	1	1
'39	18	3	3	85	10	9	8	1	19	17	1	4	1	1	1	1	6	3	5	6	12	1	6	3	
'38	9	1	3	31	3	3	3		4	18		4	1	2	3	4	15	2	2	3	5	4	12		1
'37	12	3	12	57	13	9	1		21	14	2	6	6	4	16	5	9	3	4	2	16	6	8	3	1
'36	25	4	25	44	11	8	4		31	25	1	9	13	3	9	9	16	5	2	1	9	11	19	16	1
'35	16	4	21	36	9	3	8		30	13	3	8	12	1	23	4	4	5	2	2	8	11	13	14	3
Before '35	42	27	101	164	60	61	45	1	126	69	13	18	159	22	111	44	40	65	13	15	80	95	26	102	35
Unid.*					1		6	1	3	4		1	3	1			5	1	35		13	2	1	24	
Total	237	65	203	930	229	149	136	8	284	187	29	95	223	55	199	117	140	91	100	67	252	175	127	175	67
REO																									
6 Mos. '48	153	51	172	117	93	71	15	40	96	141	67	868	323	249	268	299	74	96	89	148	501	137	93	171	106
'47	213	97	124	495	95	122	33	60	202	226	70	615	389	291	202	216	132	116	219	196	681	163	139	211	59
'46	351	48	58	526	94	126	19	102	285	293	60	587	364	274	171	231	150	43	215	399	634	101	138	196	32
'45	53	6	7	168	21	17	10	11	88	37	9	268	165	88	27	154	24	11	77	107	213	96	20	44	8
'44	4	2	44	44	1	2	1		14	8	2	10	22	3	1	7	13	2	5	23	21	6	6	1	2
'43	1	1	4	37	2	4	1		3	4			2		1	2	5		9	5	3	2		2	1
'42	10	2	11	152	11	5	4	4	71	10	9	55	47	7	23	12	30	9	17	31	29	16	3	15	5
'41	2	1	1	194	13	29	6	2	31	13	2	132	59	18	17	37	9	3	16	108	74	63	6	37	1
'40	7		1	91	6	3	1	3	7	2	1	30	11	4	11	2	3	3	7	18	21	6	3	25	1
'39	4	3	3	83	13	16	3	2	32	4		37	13	9	17	9	2	5	10	37	29	4	4	33	1
'38	2	8	21	281	32	46	7	3	49	10	10	123	65	45	64	42	10	9	12	103	97	49	4	74	6
'37	2	14	15	283	65	98	7		90	15	16	121	85	41	65	43	9	12	8	109	128	63	9	61	8
'36	6	11	13	183	47	86	5	3	72	16	17	90	53	29	19	24	8	23	9	94	105	65	9	29	17
'35	7	4	7	225	42	93	4	2	48	8	29	67	66	17	31	21	2	10	15	81	78	47	4	39	28
Before '35	18	16	43	1,212	80	444	14	9	88	29	36	261	142	170	135	111	11	111	58	311	235	261	10	115	87
Unid.*	1			8	3		7	4	8	17		36	3	6	4	5	16	3	137	11	168	13	2	143	
Total	829	261	534	4099	618	1156	138	245	1155	829	348	3330	1809	1252	1049	1224	517	452	903	1779	3034	1099	439	1193	351
STERLING																									
6 Mos. '48			3		65							12						2	2	63					
'47			2		107		5	1	2		1	13						9	2	115	3	1			2
'46					111	1	11	2		1		9	1					11	5	93	1				2
'45		1			109	1	5				2	16						5	4	77	2	2			4
'44		1			106	3	3					1							1	21	1				1
'43					7							1							1	1					
'42		1			37		1		3		1	13	1					9	1	21	6				
'41		7			119		4		6			14			1			3	4	71	2				1
'40		1			95	1	6		3		1	6	1					1		62	1				
'39		5			65	4	2					1						2		42	1				
'38		4			63	4	1								1			2	1	33					
'37		4			82		2					7	1		1			1	13	63	2				
'36		1			82		2			1		6	3		1				2	22					
'35					43					2		2	1		1				2	10	1		5		
Before '35		4			236	1	6		13	2		106	6		3	3			9	96	5	4	2	1	
Unid.*					14				2			1							4	9	3				
Total		34			1341	15	47	3	29	5	4	3	212	14		8	3		45	151	832	28	7	7	11
STEWART																									
6 Mos. '48			3							7		6	6												
'47			6				1			10		1	9	13						2	1			4	6
'46	1		6	2			6		11	8		1	11	11			3		2	4				4	8
'45			1				1						1	1			1		2	3				6	6
'44			1																	1	1				2
'43																									2
'42															5										
'41			1							1		1	4	1	1				1	1				2	
'40				1															1	2	3	1		1	
'39			4	2		1		1	1			2						1	2	3	1				
'38			1	13		15				1		1	5	2		1	1		1	2	12	2		2	
'37			1	7	2	20			1	1		4	25	1		11	1	3	4	28	3			1	
'36		1	1	7		28			1	1		10	27			6	1		4	13	1	1		5	
'35				30	1	13			1			4	17			2				14		1		2	
Before '35		2		41	1	71	1		3	4		11	35	3	3	10	2	1	5	27	2		1	2	1
Unid.*	1					1	1												6				1		
Total	2	3	28	103	4	157	2	1	8	30		35	141	43	4	29	9	9	28	109	11	2	2	29	25
STUDEBAKER																									
Mos. '48	286	150	312	1701	342	289	37	62	389	415	324	1977	1167	967	756	495	391	243	281	573	1055	693	247	539	240
'47	590	303	561	3601	482	464	119	40	886	789	424	2027	1382	1075	982	688	764	389	483	825	1401	842	584	907	392
'46	381	162	348	2516	288	338	64	66	610	520	270	1260	1279	580	590	339	455	200	258	572	962	551	348	539	298
'45	35	20	18	184	28	29	8	2	25	30	46	342	186	105	57	102	46	19	15	44	162	186	48	78	50
'44	13	5	2	77	16	1	3	1	3	10	340	78	25	28	4	52	6		2	5	41	47	6	11	90
'43	6	2		59	6	3	3		8	3	5	18	20	7	5	18	7	10	5	6	6	8	5	3	134
'42	51	10	10	167	53	14	3	1	91	55	30	85	67	72	94	57	42	14	7	16	63	91	49	32	69
'41	65	38	96	513	83	70	9	23	96	84	84	244	303	99	123	92	47	40	36	81	177	96	49	88	86
'40	28	5	19	111	10	18	2	1	25	14	13	102	105	18	15	24	24	5	13	22	55	28	12	13	19
'39	13	15	25	325	38	26	5	2	30	14	35	78	87	42	21	24	16	16	11	73	51	39	11	18	42
'38	2	6	8	317	24	21	2	1	16	19	35	78	91	48	17	25	12	14	13	32	38	44	4	26	38
'37	21	23	38	603	69	51	6		27	25	88	234	164	95	106	77	15	38	15	53	83	116	21	48	67
'36	10	14	15	221	27	20	5	2	19	15	17	123	118	35	21	20	12	15	14	29	36	63	9	38	14
'35	2	8	10	107	19	12		1	8	12	8	36	54	16	19	28	7	8	6	21	10	51	5	17	18
Before '35	30	44	67	1054	140	169	7		53	56	32	123	248	82	126	101	18	85	33	81	76	259	18	121	74
Unid.*	7		5	24	2	1	8	2	19	25	12	24	6	4	5	5	54		172	6	93	6	6	425	
Total	1520	805	1480	11580	1584	1528	283	204	2287	2060	1763	6829	5342	2853	2941	2057	1914	1096	1344	2439	4303	3030	1422	2999	1629

* Unidentified as to year of manufacture.

Data from the Reuben H. Donnelley Corp. are as of July 1, 1948.

AND YEAR OF MANUFACTURE—*Continued*

Model		Nab.	Nev.	N. H.	N. J.	N.M.	N. Y.	N. C.	N. D.	Ohio	Okla.	Ore.	Pa.	R. I.	S. C.	S.D.	Tenn.	Tex.	Utah	Vt.	Va.	Wash.	W.Va.	Wis.	Wyo.	Totals
PLYMOUTH	6 Mos. '48	6		6	44	1	105	3	10	21	5	3	51	9	2		6	19	10	4	35	5	9	4	1	747
	'47	5		14	151	19	39	15	9	67	10	15	137	7	7	14	11	28	21	4	51	8	12	16		1393
	'46	4		4	107	5	22	13	3	23	8	11	65	6	1	10	9	14	9	2	42	8	9	3		782
	'45							1					35					2		1	2	1				81
	'44				4		1	2					31				4				1	1				86
	'43				2			2					20								1	1		2		86
	'42	2	1	3	71	3	15	7		23	9	7	92	4	5	1	16	18	5	2	17	5	6	10	1	573
	'41	98	30	57	534	68	595	233	87	499	131	126	716	54	147	45	163	560	39	33	271	202	225	245	27	9620
	'40	90	34	67	420	72	554	181	71	499	153	146	734	77	118	67	109	543	53	38	239	190	215	260	21	9516
	'39	85	11	47	384	54	567	159	57	380	138	123	907	59	101	50	102	477	55	25	172	124	189	239	32	8329
	'38	88	10	23	308	53	470	128	39	273	107	104	537	20	63	40	88	374	21	19	105	101	204	218	18	6088
	'37	104	14	45	487	121	695	286	79	619	240	225	838	64	135	63	182	663	74	37	210	257	373	507	43	12109
	'36	50	9	20	249	16	197	79	23	171	77	41	438	17	44	29	80	226	18	10	68	109	99	133	9	4296
	'35	38	1	11	114	3	72	56	7	93	53	28	83	8	26	18	64	130	9	1	51	87	56	88	9	2288
	Before '35	111	14	66	241	15	319	112	24	281	125	113	230	44	69	61	127	332	18	27	101	318	120	325	23	6752
	Unid.*				80	4	4		2	9	22		29	9	3	3	11	9			1		1	6		913
	Total	681	124	363	3176	437	3651	1277	411	2958	1078	942	4943	377	721	401	972	3388	332	203	1366	1417	1518	2056	184	63590
PONTIAC	6 Mos. '48	1	1	6	12	2	179	2			15	7	7	15	13	4	1	1	4	5		34	2	8	1		472
	'47	1	1	18	30	4	13	9			22	5	4	33	3	9	6	4	3	12	4	51	5	7	2	1	706
	'46	3		7	18	3	9	7			13	3	9	9	3	6	3	3	6	6	1	31	4	4	1		375
	'45							2				1		2								2					21
	'44			1						1				3													14
	'43							1					1	3						1							16
	'42	2			6	1	3	9			12	7	2	3	3	4		1	3	2	1	12	5	5	4		223
	'41	4		11	26	4	22	17			12	2	13	19	5	7	1	1	5	9	4	20	13	2	3		497
	'40	6		16	15	2	18	12			6	4	11	18	1	12	3	3	7	2	2	26	8	3	4		458
	'39			7	13		14	5			5	5	4	14	6	6	1	1	13	3	3	13	2	3	7		329
	'38			2	9	2	7	2			5	2	5	4		3	1	3	13	1	1	7	3	2	2	1	190
	'37	5		6	4	1	11	9	1		12	12	5	9	3	3	2	6	17		1	21	9	11	7	395
	'36	6		7	10	1	13	8			18	13	5	8	3	9	4	12	48	1	1	14	20	9	14	1	531
	'35	4		2	7		9	4			19	10	5	9	3	8	1	11	16	1	1	13	11	11	6		412
	Before '35	44	1	41	11	1	108	20	15	84	82	49	64	17	30	28	28	94	3	13	35	94	41	206	5	2618
	Unid.*				17	1					2	1	14	2	2			4		1	1			1		152
	Total	75	3	124	178	22	406	107	16	224	125	122	227	66	104	51	74	233	45	34	280	176	106	258	9	7420
REO	6 Mos. '48	94	4	26	148	23	452	208	60	580	156	89	337	23	100	108	185	385	32	37	108	81	138	158	23	8011
	'47	107	11	47	284	39	956	325	43	860	190	130	1126	40	199	83	190	545	14	80	212	163	190	310	11	11345
	'46	94	6	80	159	33	623	423	39	454	149	111	807	13	250	68	186	375	7	66	195	184	168	298	15	10320
	'45	20	1	23	61	2	173	37	32	199	52	46	241	3	40	24	22	67	8	13	50	84	97	52	12	3059
	'44	1	1	4	10	1	18	1	2	22	7	46	86	1	5	1	1	13		2	5	26	14	10	1	521
	'43				6		4	2		1	2	23	28		1			4	1		1	5	1			166
	'42	3	5	10	42		88	24	1	49	7	188	82	2	7	3	13	22	3	4	14	78	37	26	1	1279
	'41	4	2	17	53		120	11	6	91	5	77	239	8	7	7	7	28	3	3	14	34	52	45	6	1703
	'40	2		1	2	1	23	1	2	9	5	6	87	2	4		5	7	1	1	8	2	5	9	1	414
	'39	13			33	1	91	11	2	45	6	9	83	3	2	6	4	8	1	1	1	7	1	7	14	15	782
	'38	24	2	4	75	3	205	12	1	154	40	32	217	11	5	15	12	35	4	8	15	49	49	62	4	2205
	'37	14	7	9	59	11	223	21	10	173	41	50	256	19	11	26	19	41	5	8	31	85	71	96	7	2637
	'36	15	5	13	53	7	150	5	6	112	15	38	192	24	3	17	6	32	4	9	10	31	42	80	2	1875
	'35	10	2	15	73	3	219	4	17	91	10	56	117	24	10	14	8	33	15	9	8	93	42	65	4	1911
	Before '35	59	10	38	350	12	735	16	57	295	57	108	860	101	16	66	16	82	22	45	34	246	95	266	9	7299
	Unid.*	2		1	74	2			10	4	8	1	60	7	2	4	5	9		1	16	3	1	26		827
	Total	462	56	288	1482	138	4088	1099	288	2949	760	984	4518	281	682	442	679	1686	120	287	721	1151	1016	1475	97	54384
STERLING	6 Mos. '48			1	5		15	3		3		15	29													
	'47		1	5	17		70			2		13	58	1				4	1			12		3		238
	'46		2	20	11		64			4		24	80	5			3	3	1	6	1	8		42		487
	'45		1	2	9		23			1		22	48	1					3	1	1	7	1	25		499
	'44		1	1	1		15					15	36	1					18			3		11		382
	'43		1	1	2		6					1	11						2			1		9		238
	'42	3	1		4	1	15	1		1	1	11	41	1				1				3	1	11	1	196
	'41	1	1	3	9		35	1			2	3	36	6			3	1	2			9	3	16	1	366
	'40			4	5		24	1				6	18	6					2			2	3	10	1	261
	'39		1	4	17		30					5	32	4			1		2			3	1	5	1	228
	'38		1		14		34			2			6										1	4		171
	'37				7		42			1			15											9	1	256
	'36			1	8		36			4			16					1	2					25	3	212
	'35			1	5		21			1			2	1										12		111
	Before '35		1	2	31		158			15		8	41			1	1	1			1	12	1	177	1	951
	Unid.*				5		4					5	2				3					2		2		56
	Total	4	10	45	150	1	592	6		34	3	128	469	28		1	11	11	35	8	3	64	13	361	9	4856
STEWART	6 Mos. '48				2		19	20	8	2	1															
	'47				5	1	33	31	12	1	2		8	1		1		9			9			2		117
	'46				2		42	32	5	1			13	6	3						28			7		201
	'45						3	1	1				8	4	3			4			11			3		177
	'44						1		1			1	2	3	1			1			1			1		22
	'43						1				1		1						1							8
	'42				1		4	1					3								1	1				7
	'41						9	1	2	1	2		2	1		1	1				1					19
	'40						3		1				6	5	1		3	5					2	1		49
	'39			2	1		15	1		1			5	3			1							1		23
	'38			1	19		113						11	6			1	1	1				1			53
	'37			2	29		228	1		13			39				1	1						2		247
	'36	****		3	37		213		1	22			67	2		1	1	2		1				8		478
	'35			2	13		108			27	1		105		2				2					7		509
	Before '35			8	39		517	1	2	12	6		37	1			1		1		2	1		5		277
	Unid.*				12		3			35			187	5	2	1	1	5		4	2	1	5	20		1095
	Total		18	160	1	1308	89	33	116	13	1	499	38	10	5	9	30	2	12	54	3	8	59	2		3277
STUDEBAKER	6 Mos. '48	500	70	79	588	121	928	626	279	1454	379	412	1033	80	200	313	430	1521	195	123	383	453	236	425	136	24275
	'47	631	86	125	885	231	1956	1069	413	1678	779	773	3040	151	369	359	744	2260	235	184	796	927	446	744	180	40001
	'46	347	71	64	650	138	1439	863	220	1393	437	541	1857	81	360	186	483	1597	159	65	485	744	282	457	107	26774
	'45	38	3	6	46	15	124	44	57	271	42	74	303	11	29	76	44	145	13	4	31	78	88	152	23	3580
	'44	8			7	2	17	24	21	25	8	28	80	3	5	1	6	29	2	3	21	295	32	18	11	1804
	'43	4		1	16	3	55	31	2	31	6	29	25		4	3	5	16	2	2	19	115	37	5	6	764
	'42	29	2	2	42	21	105	97	49	117	35	28	84	2	40	17	72	111	23	5	53	71	19	38	21	2367
	'41	58	16	24	121	22	479	153	98	341	68	122	306	29	54	41	100	293	59	17	110	218	93	89	31	5620
	'40	6	3	5	52		106	19	7	66	11	35	75	7	8	8	13	53	8	5	16	56	17	34	5	1316
	'39	16	8	1	48	10	148	10	7	75	9	62	153	17	3	12	16	81	32	7	14	98	37	23	10	1949
	'38	19	4	3	42	7	115	7	9	70	14	33	109	3	3	16	15	56	23	8	13	57	17	32	9	1617
	'37	27	21	12	105	14	285	14	23	186	53	146	261	16	20	19	24	169	48	5	27	186	84	91	18	3939
	'36	8	8	3	68	2	185	11	13	106	8	42	168	7	9	7	17	27	14		15	72	23	35	2	1729
	'35	9	2	2	13	1	57	3	10	54	6	28	84	5	8	3	7	11	5	3	8	37	13	21	1	825
	Before '35	116	6	31	139	10	336	10	55	149	56	157	192	21	30	77	38	96	15	22	30	300	68	196	17	5258
	Unid.*	7			88		3	1		8	24		182	13	6	4	25	14			1			16	3	1296
	Total	1821	298	358	2908	586	6279	2982	1281	6039	1835	2826	7902	446	1148	1142	2037	6481	833	456	2622	3705	1492	2370	580	123112

* Unidentified as to year of manufacture.

Data from the Reuben H. Donnelley Corp. are as of July 1, 1948.

TRUCKS IN USE BY MAKES, BY STATES

	Model	Ala.	Ariz.	Ark.	Calif.	Colo.	Conn.	Del.	D.C.	Fla.	Ga.	Idaho	Ill.	Ind.	Iowa	Kan.	Ky.	La.	Me.	Md.	Mass.	Mich.	Minn.	Miss.	Mo.	Mont.
WHITE	6 Mos. '48	67	20	43	182	49	62	10	52	79	79	25	608	310	98	69	92	72	13	81	135	240	96	37	142	31
	'47	166	47	65	579	113	173	34	119	206	214	25	864	528	179	211	211	262	73	181	412	321	283	116	348	97
	'46	196	36	70	555	95	221	23	60	224	248	15	491	362	101	116	95	148	44	199	449	198	205	104	264	42
	'45	81	19	43	512	67	110	12	48	133	99	14	334	342	96	70	51	78	22	121	322	152	129	30	194	18
	'44	28	13	19	295	33	38	7	20	37	50	3	192	135	37	36	20	33	10	46	197	57	56	16	93	10
	'43	7	4	3	261	21	7	2	32	10	24	18	73	44	8	41	21	8	4	54	32	29	14	2	36	17
	'42	52	14	43	313	82	27	6	178	142	136	19	211	82	47	60	49	96	21	39	132	37	58	59	91	16
	'41	77	29	25	627	69	171	12	125	138	179	26	537	358	27	48	109	87	20	167	511	123	146	38	202	29
	'40	38	15	18	488	32	105	7	91	58	86	4	305	150	19	23	70	46	6	60	267	58	80	12	151	12
	'39	22	10	6	179	14	94	8	35	39	33	9	229	69	5	11	47	29	10	91	221	46	71	15	94	9
	'38	17	11	9	241	21	67	4	41	19	21	9	160	76	8	17	34	37	7	56	154	20	59	9	58	13
	'37	31	32	8	321	50	99	9	27	39	54	13	231	86	7	26	46	23	7	76	184	47	71	16	100	22
	'36	21	4	3	273	24	96	8	24	41	48	5	157	47	7	15	46	19	11	69	183	50	82	6	101	47
	'35	11	5	3	163	16	27	3	20	19	17	2	117	27	1	7	18	16	4	33	89	11	55	4	30	4
	Before '35	23	14	14	980	149	130	9	82	96	81	23	453	95	15	49	70	71	12	100	341	71	281	26	170	41
	Unid.*	12	1		9	5	3	3	105	14	17	4	36	6	3	1	1	2		112	7	7	183	1	112	
	Total	870	282	372	5995	870	1424	156	1039	1294	1387	214	5018	2717	658	800	981	1078	264	1613	3639	1613	1687	489	2188	408
WILLYS	6 Mos. '48	791	143	672	1495	861	257	52	98	338	732	210	1914	1376	950	708	684	630	372	248	395	1498	725	325	759	559
	'47	1248	283	850	2095	814	185	116	29	470	1047	253	563	636	1230	492	595	749	398	155	149	1283	682	511	358	1019
	'46	819	364	574	3767	356	284	69	38	578	778	136	301	952	801	475	297	553	368	187	144	1627	656	434	184	400
	'45	77	20	45	354	16	49	8	13	85	116	10	31	127	59	63	66	39	53	9	11	77	38	51	17	35
	'44	29	7	4	219	10	7	2	4	7	67	4	2	7	3	7	16	10	11	1	4	3	13	10	4	3
	'43	58	22	37	593	40	5	3	6	14	163	12	3	20	15	39	12	19	14		2	4	11	13	14	21
	'42	273	34	109	686	48	19	6	8	81	546	23	13	49	48	48	43	96	43	1	12	40	34	69	22	71
	'41	135	26	49	605	33	9	8	7	130	130	11	60	40	32	28	42	42	25	10	28	49	28	42	35	32
	'40	79	12	43	308	61	19	4	5	149	45	12	85	61	37	34	50	61	38	7	26	70	31	31	41	16
	'39	28	16	22	217	17	16	4	1	79	21	1	24	39	7	16	16	10	35	10	23	28	10	10	20	4
	'38	28	9	29	293	16	20	4		78	34	8	92	73	24	51	33	33	14	20	29	44	32	22	51	9
	'37	35	19	9	392	16	7	3		77	15	1	21	57	11	9	20	20	4	3	10	32	14	6	13	5
	'36	18	18	18	453	21	18			93	27	14	8	39	10	11	16	23	2	2	3	27	10	6	18	8
	'35	3	6	11	471	8	8			50	9	12	5	17	2	5	9	6	1	1	2	8	6		12	5
	Before '35	12	18	25	296	65	45	4	1	70	32	8	55	83	40	103	30	12	26	10	29	32	124	12	67	28
	Unid.*	35		13	36	2	2	8	5	28	81	4	15	13	4	1	9	56	1	121	2	142	5	32	149	1
	Total	3650	1000	2507	12310	2385	950	288	215	2325	3843	721	3151	3998	3278	2091	1925	2356	1406	785	850	4961	2421	1628	1784	2212
YELLOW	6 Mos. '48	14			11		1	1	1	1	1		12				1	57				3			7	
	'47	25		10	21		5	1	5	7	5		51				6	67	12	1	27				8	
	'46	3		1	12		27	1		8			130	2		8	3		5	3	27	1	1		3	
	'45	17		8	137		15		7	1			125			2		42	5		30	1				
	'44	12		6	91		5	1	4	16	1		1	9			2	45		6		19				
	'43				19					2						1	1						11			
	'42	12		8	109	4	44	6	25	20			62	32	22	14	3	38	9		21	15	23		144	1
	'41	11	1	5	179	2	177	8	26	11	1		134	28	39	4	9	13		37	37	35	26	1	98	4
	'40	32	4	12	325		68	4	47	25	15		88	7	12	5	43	39		12	22	50	29	4	73	4
	'39	6		12	92		66	6	10	11		1	99	33	18	4	4	2		26	17	22	9	8	10	18
	'38	18	2	31	80		20	3	13	6			101	2	7	7	7	18		18	14	15	17	17	29	
	'37	15		14	128	8	46	3	81	3			123	20	16	5	5	15	3	2	11	39	25	24	21	14
	'36	24		9	78	3	86	3	6	5		20	121	8	6	2	11	11	1		5	5	32	2	83	20
	'35	5	1	2	19	3	7	1		2		1	43	4	2	9	1				4	1	2	2	2	4
	Before '35	8		3	104	9	55	1		2	5	28	20	7	5	12	11	2	1	1	7	1	13	4	22	10
	Unid.*	1	2	1		1			17	1	1		3	1	2	1	7	4	1	55		6			1	
	Total	203	10	122	1405	30	622	37	245	121	29	50	1052	151	129	74	114	351	37	161	222	213	188	62	497	73
MISC.	6 Mos. '48	96	29	41	446	93	194	22	17	70	266	21	376	141	44	73	113	116	26	154	232	215	99	100	65	44
	'47	266	74	112	1582	229	607	76	97	281	591	78	875	332	171	139	208	267	87	144	525	476	225	125	352	81
	'46	286	66	112	1269	206	652	33	90	272	592	57	741	291	182	156	196	214	89	122	645	424	243	125	207	66
	'45	60	14	24	614	52	209	11	71	66	132	18	233	83	40	53	59	70	38	38	240	64	82	28	61	44
	'44	41	6	8	374	26	66	4	12	35	79	9	111	26	30	34	25	16	17	13	145	12	27	35	21	19
	'43	14	3	7	153	5	24	17	2	4	30	2	6	16	16	18	17	2	7	35	9	9	13	12	2	
	'42	170	30	108	774	94	103	18	10	99	270	23	176	67	51	69	79	116	41	31	216	118	46	86	55	15
	'41	147	55	89	992	110	329	24	58	148	357	45	348	133	92	114	95	131	53	70	333	211	150	75	133	27
	'40	113	28	67	700	70	211	19	40	120	300	34	317	172	70	69	113	79	40	62	279	132	98	78	108	25
	'39	86	32	58	416	60	152	14	11	129	209	22	250	90	61	62	91	59	44	29	225	110	139	65	51	15
	'38	71	20	51	443	53	84	14	11	93	174	19	171	92	48	103	81	47	44	33	133	97	99	42	35	18
	'37	67	46	93	850	167	202	20	83	188	235	48	373	135	138	201	120	76	43	46	177	251	231	99	107	68
	'36	84	34	97	692	126	147	12	47	138	173	51	323	126	123	120	101	69	51	29	191	179	147	57	80	64
	'35	47	38	54	371	60	67	9	37	70	102	33	150	93	85	121	85	39	43	23	123	83	95	21	124	49
	Before '35	144	195	432	5515	730	995	110	44	508	476	194	1503	705	512	735	414	211	391	112	930	498	1029	137	631	494
	Unid.*	75	15	61	43	385	158	5	133	484	116	29	246	77	48	23	44	545	27	279	114	407	24	114	1841	7
	Total	1752	705	1414	14734	2466	4202	408	765	2641	4112	689	6213	2579	1655	2158	1342	2092	1039	1191	4522	3211	2698	1142	3853	938
	Total All Makes	119770	35434	115327	482140	99830	87002	17394	20011	142465	151650	51617	334081	186351	145711	169195	121645	110149	56530	80744	142150	223946	158950	108660	195437	63442

Unid.* Unidentified as to year of manufacture.

Data from the Reuben H. Donnelley Corp. are as of July 1, 1948.

U. S. Summary – Trucks in Use

	July 1 Total	48	47	46	45	44	43	42	41	40	39	38	37	36	35	Prior to 35	Yr. Not Given
Autocar	26,409	1,185	4,118	4,616	2,262	1,202	298	772	2,483	1,484	1,510	1,032	1,351	914	518	2,511	273
Brockway	24,055	1,247	4,082	3,704	2,087	1,078	102	334	2,377	1,439	1,688	1,110	1,230	1,174	550	1,575	298
Buick	13,404	383	577	328	57	46	12	230	545	491	414	410	520	542	358	8,207	284
Cadillac	4,789	340	932	516	3	15	3	176	565	166	153	105	122	109	70	1,498	106
Chevrolet	1,927,633	139,546	205,990	250,928	36,353	17,479	2,750	94,777	202,362	162,235	127,437	89,285	145,589	129,297	77,339	221,105	25,100
Crosley	3,795	1,388	2,021	54	6	5	10	93	103	23	9	8	4	6	5	15	43
Diamond T	66,358	5,320	10,575	5,440	3,274	1,746	233	1,565	5,993	5,104	3,889	3,251	5,510	4,832	3,015	5,786	836
Divco	25,337	2,973	5,613	4,164	1,756	273	103	550	2,573	1,726	1,500	1,148	922	723	268	705	340
Dodge	766,124	55,093	119,215	114,542	21,359	7,692	2,191	42,504	84,425	52,801	43,052	29,057	47,890	60,573	30,802	45,593	9,328
Federal	26,678	2,222	5,728	4,404	2,124	632	349	882	1,367	1,160	992	778	1,130	1,291	727	2,132	560
Ford	1,889,857	124,764	173,562	167,800	45,228	18,819	8,060	77,307	176,205	128,891	98,067	74,557	138,256	129,849	96,712	407,268	26,512
F.W.D.	4,853	258	923	735	380	145	26	201	298	178	175	177	321	265	165	555	70
G.M.C.	353,706	38,480	51,850	29,031	14,836	7,985	2,935	26,580	46,314	32,830	24,054	14,256	30,550	15,451	3,871	9,841	4,852
Indiana	2,870	77	80	47	20	9	6	13	58	113	134	219	605	731	257	549	52
International	772,226	67,032	115,326	86,251	29,045	15,113	3,600	27,775	85,256	67,199	55,930	45,630	48,476	47,616	28,453	39,862	9,852

AND YEAR OF MANUFACTURE—*Concluded*

	Model	Neb.	Nev.	N.H.	N. J.	N.M.	N. Y.	N. C.	N. D.	Ohio	Okla.	Ore.	Pa.	R. I.	S. C.	S. D.	Tennn.	Tex.	Utah	Vt.	Va.	Wash.	W.Va.	Wis.	Wyo.	Totals
WHITE	6 Mos. '48	84	3	8	193	16	391	137	14	644	69	65	492	50	44	18	78	355	22	18	109	66	112	119	15	5824
	'47	188	3	33	477	76	1292	345	26	1337	205	175	1591	59	168	50	279	1058	68	29	243	141	180	353	64	14230
	'46	129	3	38	429	53	1093	292	12	914	143	135	953	64	149	26	246	695	23	18	183	88	156	245	28	10676
	'45	88	2	19	264	25	672	130	8	588	143	110	612	45	71	19	86	448	21	4	104	95	135	229	19	7054
	'44	47		6	140	6	345	77	2	319	55	61	416	72	40	3	66	270	15	7	50	72	82	108	19	3723
	'43	31	3		62	6	72	32		138	27	33	71	17	7		17	49	30		25	56	34	36	6	1524
	'42	68	8	6	108	47	248	97	1	335	67	164	280	8	62	4	111	285	35	5	103	119	94	118	33	4392
	'41	77	4	18	465	26	975	239	6	1182	129	154	678	66	81	6	157	538	34	9	117	215	143	200	25	9424
	'40	11	1	15	324	15	481	62	2	617	51	80	358	50	30	3	91	155	32	6	72	81	56	115	6	4903
	'39	10	3	10	280	10	487	51	2	420	32	37	422	19	15	1	44	91	12	5	27	61	62	43	5	3582
	'38	5	6	5	198	6	484	42		268	13	46	218	19	12	1	27	92	8	9	17	66	31	30	1	2765
	'37	10	6	9	270	4	841	35	1	409	44	63	439	19	10	1	37	92	14	9	38	106	100	43	10	4255
	'36	7	2	10	313	7	695	48	2	329	17	28	464	13	16	3	30	51	8	6	26	96	71	68		3699
	'35	2		6	146	5	391	24	4	173	8	20	92	5	8	3	13	24	1		18	41	17	10	1	1714
	Before '35	39	8	10	518	13	1131	30	9	550	52	150	411	46	32	6		65	10	5	57	280	44	79	15	7017
	Unid.*	3		2	80	2	22	4		19	6		94	10	2	1	422	29	2	1	1	7		14	2	1201
	Total	799	46	195	4297	319	9620	1645	89	8240	1061	1309	7570	564	767	145	1349	4296	333	131	1190	1590	1287	1807	248	85983
WILLYS	6 Mos. '48	1040	47	182	853	117	1002	1278	133	1879	828	691	1011	77	461	763	32 8	1706	257	260	688	381	800	499	315	32349
	'47	773	65	189	469	72	875	1415	126	1015	1072	864	1671	63	643	743	30	1847	234	303	810	476	1159	600	277	32359
	'46	544	106	213	468	67	828	1285	112	1168	677	628	1376	52	641	414	13	1447	148	246	654	334	865	619	108	28344
	'45	59	15	40	67	4	51	59	13	133	43	110	75	9	36	21	175	120	6	19	46	58	104	39	5	2615
	'44	10	6	5	59	3	41	52	2	8	16	23	27	2	14	3	2	36	8	3	15	17	22	7		643
	'43	41	8	5	27	5	19	95	4	12	37	85	20	1	23	4	44	87	46	8	22	50	27	4	12	1784
	'42	60	20	14	55	23	71	188	7	53	131	191	31	1	93	19	57	249	53	10	62	162	80	13	9	4090
	'41	24	8	9	58	7	150	89	15	109	50	61	222	29	38	16	78	105	15	6	39	66	64	10	10	2896
	'40	13	2	13	94	4	173	65	8	173	42	74	139	9	22	12	27	115	22	13	12	56	65	35	3	2559
	'39	5	1	8	29	3	65	19	1	71	22	19	141	6	16	10	15	48	1	4	22	15	52	7	3	1253
	'38	10	5	13	43	4	101	42	10	92	53	33	95	3	18	14	20	90	3	11	25	28	41	38	5	1791
	'37	3	4	8	29	4	29	11	1	80	24	58	34	1	13	4	28	31	12	3	11	103	17	5	1	1306
	'36	10	3	5	15	6	24	12	5	109	33	102	18	1	10	5	10	51	10	2	4	110	18	8	2	1474
	'35	5	2	4	10	3	22	11	3	70	10	45	9		2	1	19	11	2	1	2	47	5	4	1	939
	Before '35	73	8	16	50	6	155	14	22	110	21	42	128	8	8	36	16	51	4	11	14	88	40	156	5	2303
	Unid.*	5			85		20	6	1	43	47	2	197	2	13	8	09	14	3	2	2	1	6	26	3	1266
	Total	2675	300	702	2402	328	3626	4642	463	5125	3105	3039	5194	264	2057	2073	11	6017	824	902	2428	1992	3365	2070	759	118171
YELLOW	6 Mos. '48				4		8	3		11			6	15			32				9		23			221
	'47	1			10		193	4		19			9	3			56	22	31		11	2	13			625
	'46				4		2	4					5	12			10				1		10			253
	'45				15		10	2		10				19				3			10					459
	'44				12		6	1		23		19	18	9	2		33				16					357
	'43						21					14	41	2	4			2				1				80
	'42	2			205		941	5		78	22	10	84	5	4		13	14	15		1	58	33	21		1274
	'41	20			257	1	383	6		90	26	8	108	22	1		9	22			28	29	33	14		1922
	'40		1		214	6	64	6		83	19	5	56	7	4		53	31	3		2	8	29	13		1512
	'39				27		138	10		61	6	16	78	6	3		14	18	12		5	19	48	9		939
	'38	2			255	1	78	17		109	11	51	42	4	5		48	42		1	6	16	27	7		1139
	'37			1	271		132	56		57	20	62	40	2	3		12	36	43		20	9	31	24		1443
	'36	1		1	134	1	445	21		27	13	7	5	1	12	1	19	12	6		1	1	46	4		1279
	'35	1			33		333	2		6	15		8	2	1			1			4	1	9	10		542
	Before '35	8			175	3	284	7	1	2	2	5	23		1	2	1	29	3	1	1	9	2	37		907
	Unid.*				46	2	11	3		4	1		4		4			1	3				4			196
	Total	35		3	1698	14	2174	147	1	572	118	197	482	110	42	3	303	233	116	2	112	144	308	139		13148
MISC.	6 Mos. '48	33	4	22	223	49	1486	204	17	220	92	90	351	62	61	27	154	397	32	16	178	130	86	125	7	7123
	'47	93	30	36	560	46	1663	394	29	785	207	358	1201	171	136	55	177	847	227	50	422	379	298	411	34	16650
	'46	76	22	36	492	80	1265	456	15	504	182	169	572	109	135	33	296	769	172	26	269	224	142	336	22	13720
	'45	34	6	7	105	21	348	212	1	138	61	75	199	62	8	12	53	247	58	12	75	127	46	122	4	4420
	'44	18	5	3	31	4	148	173	5	67	29	55	94	61	20	5	47	132	31	6	27	33	18	51		2279
	'43	2			21	2	70	41		25	12	9	97	45	5		5	33	9	4	13	12	3	11		856
	'42	27	6	13	100	25	319	236	11	170	86	99	298	76	60	11	172	331	75	9	118	116	63	120	9	4859
	'41	22	11	25	216	26	642	317	8	285	101	146	360	107	55	21	80	355	40	18	164	159	112	252	14	7837
	'40	36	11	14	196	27	710	242	11	220	78	75	380	132	45	22	135	291	23	12	110	107	64	206	5	6495
	'39	37	5	8	174	12	564	132	3	210	69	53	190	72	39	15	66	208	44	15	103	87	70	158	10	4824
	'38	43	3	7	158	10	497	82	12	201	72	46	300	35	42	11	50	220	8	9	75	143	55	113	4	4273
	'37	49	13	9	296	25	551	123	37	315	86	125	339	77	54	10	100	367	103	23	111	241	117	257	12	7446
	'36	57	3	16	327	21	465	83	6	330	74	111	217	64	55	34	93	241	24	18	97	172	78	230	11	6082
	'35	19	1	8	103	8	281	80	5	183	55	71	105	16	51	16	84	123	11	9	51	85	49	181	8	3586
	Before '35	398	58	151	1059	50	2895	202	216	1072	414	747	1995	231	169	263	227	1008	99	138	222	1226	352	1620	60	32383
	Unid.*	59	1	10	821	19	383	107	27	169	45	102	93	55	14	23	57	376	10	71	57	46	25	194	4	8037
	Total	1002	179	365	4882	428	12230	3054	403	4086	1665	2341	6793	1375	953	555	1809	5831	956	434	2089	3286	1578	4387	204	130870
	Total All Makes	94327	10823	27600	187445	36594	409718	159123	59415	295806	148410	108619	361737	30247	81944	54378	125067	411787	31953	23039	126254	143907	95106	161828	26542	6605290

Unid.* Unidentified as to year of manufacture.

Data from the Reuben H. Donnelley Corp. are as of July 1, 1948.

by Makes and by Year of Manufacturer

	July 1 Total	48	47	46	45	44	43	42	41	40	39	38	37	36	35	Prior to 35	Yr. Not Given
Kenworth	2,638	139	431	334	313	111	31	97	205	175	110	67	90	113	51	360	11
Mack	82,977	4,854	13,195	4,592	4,856	3,063	514	3,812	10,126	6,974	5,941	3,618	4,315	2,865	1,282	12,142	828
Packard	6,892	500	220	126	12	15	37	208	531	523	419	352	698	439	268	2,353	191
Plymouth	63,598	747	1,393	762	61	66	56	573	9,620	9,516	8,328	6,098	12,109	4,296	2,288	6,752	913
Pontiac	7,420	472	706	379	21	14	15	223	497	458	329	198	395	531	412	2,618	152
Reo	54,354	8,011	11,345	10,320	3,059	521	166	1,279	1,703	414	782	2,205	2,637	1,875	1,911	7,299	827
Sterling	4,656	236	487	499	352	238	34	196	366	261	228	171	286	212	111	951	56
Stewart	3,277	117	201	177	22	6	7	19	49	23	53	247	478	509	277	1,055	35
Studebaker	123,112	24,275	40,001	26,774	3,580	1,804	764	2,367	5,620	1,316	1,949	1,617	3,939	1,729	925	5,256	1,296
White	85,983	5,824	14,230	10,676	7,054	3,723	1,524	4,392	9,424	4,803	3,582	2,785	4,255	3,899	1,714	7,017	1,201
Willys	118,171	32,349	32,359	28,344	2,615	843	1,784	4,090	2,896	2,559	1,253	1,791	1,306	1,474	939	2,303	1,266
Yellow	13,148	221	625	253	459	357	80	1,274	1,922	1,512	939	1,139	1,443	1,279	542	907	196
Miscellaneous	130,870	7,123	16,650	13,720	4,420	2,279	856	4,859	7,837	6,495	4,824	4,273	7,446	6,082	3,586	32,383	8,037
Totals	6,605,290	525,189	832,635	789,516	185,614	85,481	28,456	297,128	651,726	490,960	385,731	285,537	461,843	418,478	257,376	828,286	93,325

Exports

CARS TRUCKS AND OTHER AUTOMOTIVE PRODUCTS

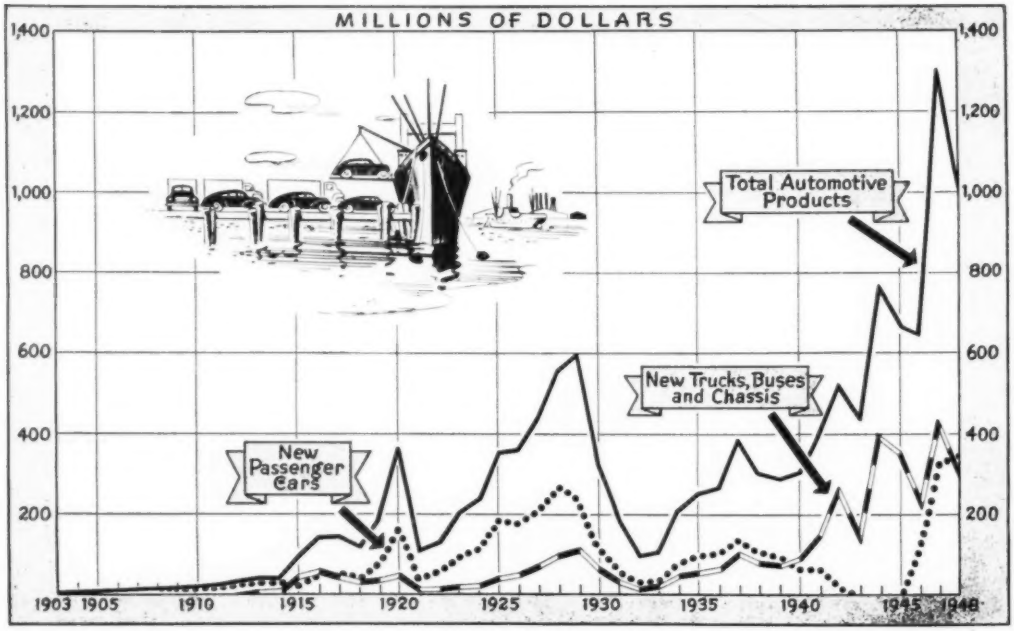
U. S. Exports of New Motor Vehicles, 1920-1948

In Units and Their Value and Including Lend-Lease

YEAR	PASSENGER CARS Number	PASSENGER CARS Value	PASSENGER CARS % of U. S. Production (Units)	TRUCKS, BUSES AND CHASSIS Number	TRUCKS, BUSES AND CHASSIS Value	TRUCKS, BUSES AND CHASSIS % of U. S. Production (Units)	TOTAL MOTOR VEHICLES Number	TOTAL MOTOR VEHICLES Value	TOTAL MOTOR VEHICLES % of U. S. Production (Units)
1920	142,508	165,255,921	7.5	29,136	46,775,781	9.1	171,644	212,031,702	7.7
1921	30,950	32,533,725	2.1	7,840	10,335,893	5.3	38,790	42,869,618	2.4
1922	66,791	81,049,816	2.9	11,443	8,270,708	4.2	78,234	89,320,524	3.0
1923	127,035	90,692,272	3.5	24,859	15,317,136	6.1	151,894	106,009,408	3.7
1924	151,380	112,534,729	4.7	27,352	19,199,344	6.6	178,732	131,734,073	4.9
1925	244,306	184,885,830	6.5	58,625	37,703,402	11.0	302,931	222,589,232	7.1
1926	238,540	176,432,157	6.3	66,880	47,176,107	21.1	305,420	223,608,264	7.1
1927	278,748	207,966,456	9.5	105,447	70,123,600	22.7	384,195	278,090,056	11.2
1928†	375,428	299,393,369	9.8	140,191	93,006,070	25.8	515,619	392,399,439	11.8
1929	346,630	239,334,000	7.5	197,872	112,607,985	25.6	544,502	351,941,985	10.1
1930	159,464	110,355,978	5.7	85,066	56,861,119	14.9	245,130	167,217,097	7.3
1931	86,437	52,851,585	4.3	49,415	26,210,975	11.8	135,852	79,062,560	5.6
1932	44,282	25,502,047	3.8	25,532	12,142,681	10.8	69,814	37,644,728	5.1
1933	67,355	33,945,464	4.2	44,103	20,691,338	12.7	111,458	54,636,802	5.8
1934	148,387	80,604,563	8.8	93,766	45,125,359	16.3	242,153	125,729,922	9.7
1935	179,470	99,342,411	5.5	100,668	51,995,938	14.4	280,138	151,338,349	7.0
1936	186,542	107,483,285	5.1	108,167	56,765,713	13.7	294,709	164,248,998	6.6
1937	237,719	140,638,203	6.0	169,076	102,889,939	18.9	406,795	243,528,142	8.4
1938	167,693	104,628,982	8.4	117,943	74,451,986	24.1	285,636	179,080,968	11.4
1939	143,909	87,171,300	5.0	116,913	71,422,015	16.4	260,822	158,593,315	7.2
1940	88,806	57,253,737	2.6	103,459	87,867,077	13.7	192,265	145,120,814	4.5
1941	81,746	60,702,648	2.4	147,132	148,149,880	13.9	228,878	208,852,528	5.0
1942	13,951	13,199,744	‡	156,344	258,241,298	19.1	170,295	271,441,042	...
1943	2,088	2,420,506	‡	74,847	145,772,105	10.7	76,935	148,192,611	...
1944	1,649	2,784,433	‡	175,080	399,795,242	23.8	176,729	402,579,675	...
1945	1,206	1,447,376	1.7	142,338	348,327,144	21.7	143,544	349,774,520	19.8
1946	116,994	122,500,568	5.4	167,980	225,929,505	17.8	284,974	348,430,073	9.2
1947	266,795	335,330,528	7.5	267,589	429,755,475	21.6	534,384	765,086,003	11.1
1948	217,305	279,837,012	5.6	203,529	343,160,770	14.8	420,833	709,592,487	8.0

‡ Taken from stockpiles. †—From 1928 through 1941 exports include shipments to non-contiguous territories.
NOTE—Prior to 1931 figures include used vehicles, but the effect of these used vehicles on per cent of production is negligible.
SOURCE—Machinery and Motive Products Branch, Office of International Trade, Department of Commerce.

1948 AUTOMOTIVE EXPORTS VALUED AT $1,016,680,000



U. S. Exports of New Trucks and Bus Chassis by Ton Rating*

From 1/4 Ton to Over 5 Tons With Diesel and Gasoline Types Over 2½ Tons

	1948		1947		1946		1945	
	Number	Value	Number	Value	Number	Value	Number	Value
¼ Ton and under	16,560	$18,359,818	27,003	$30,351,111	16,080	$16,328,496	3,143	$3,762,330
Over ¼ Ton, not over ½ Ton	19,660	22,130,203	16,299	15,213,168	8,962	6,990,882	1,787	1,626,257
Over ½ Ton and under 1 Ton	16,756	19,729,832	9,707	10,300,123	5,720	4,709,883	1,140	1,119,451
1 Ton	9,968	13,801,683	8,088	9,852,555	3,437	3,623,260	575	535,929
Over 1 Ton, not over 1½ Tons	72,307	89,007,045	99,282	123,421,351	83,999	91,106,565	50,166	70,454,247
Over 1½ Tons, not over 2½ Tons	49,448	87,434,142	80,667	124,597,159	33,729	49,179,393	63,588	167,995,251
Diesel, Over 2½ Tons, not over 4 Tons	1,341	14,753,741	1,268	10,084,297	258	985,149	115	290,886
Diesel, Over 4 Tons, not over 5 Tons	148	916,029	299	1,425,964	116	527,271	40	136,871
Diesel, Over 5 Tons	928	12,621,012	1,860	18,268,543	519	4,455,191	884	9,138,530
Gasoline, Over 2½ Tons, not over 4 Tons	8,538	28,122,427	11,198	32,119,297	9,749	26,806,652	12,846	38,001,657
Gasoline, Over 4 Tons, not over 5 Tons	1,992	12,091,420	3,363	14,670,625	2,255	9,933,277	2,233	9,238,671
Gasoline, Over 5 Tons	1,961	17,698,102	4,397	31,838,504	1,206	7,983,273	5,681	48,843,018
Bus Chassis	3,921	6,495,316	4,238	7,632,778	2,240	3,327,973	182	306,246
Total	203,528	$343,160,770	267,589	$429,755,475	168,250	$225,927,425	142,338	$348,148,144

* Machinery and Motive Products Branch, Office of International Trade, Department of Commerce.

U. S. Exports of Automotive Products, 1944-1948‡

Vehicles, Engines, Parts and Equipment

Type of Product	1948		1947		1946		1945		1944	
	Number	Value	Number	Value	Number	Value	Number	Value	Number	Value
Passenger Car and Chassis, New	217,305	$279,837,012	266,795	$335,330,528	116,994	$122,500,568	1,206	$1,447,376	1,649	$2,783,433
Passenger Car and Chassis, Used	4,641	7,854,289	10,987	16,870,001	2,482	2,671,977	1,560	1,756,678	1,428	1,505,031
Trucks, Buses and Chassis, New	203,528	343,160,770	267,589	429,755,475	167,980	225,929,505	142,338	348,327,144	175,060	399,795,242
Trucks, Buses and Chassis, Used	3,169	3,534,560	7,980	17,094,701	10,203	14,334,370	5,435	7,956,899	4,046	9,529,709
Trailers, n.e.s.	6,093	6,719,248	19,151	21,452,243	14,138	8,729,268	3,320	3,293,363	1,560	2,511,161
Motorcycles	6,672	3,217,003	10,159	3,878,424	6,114	2,413,520	6,824	3,057,813	10,018	8,253,240
Total—New and Used Vehicles	441,408	$644,322,882	582,661	$824,381,372	317,911	$376,579,208	160,683	$365,839,073	201,779	$420,377,816
ENGINES										
Diesel, truck and bus for assembly	335	$505,959	817	$961,750	1,740	$1,379,333	370	$663,015	577	$990,297
Gasoline, truck and bus for assembly	8,143	1,821,444	11,181	1,921,412	9,074	1,968,681	11,118	2,721,864	9,487	1,976,235
Passenger car for assembly	1,814	258,061	2,094	285,838	1,402	174,514	661	80,338	333	102,109
Diesel for replacement	1,135	1,490,685	2,112	2,060,133	973	904,697	285	412,671	114	115,379
Gasoline for replacement	12,291	2,859,261	16,552	3,348,983	13,106	3,357,715	8,262	1,752,013	4,692	1,091,763
Marine, outboard	12,302	1,783,555	43,639	4,403,259	6,558	705,575	4,427	1,072,148	3,978	1,172,179
Other marine	3,679	2,548,781	7,100	3,858,593	7,132	2,812,317	5,235	7,615,295	11,222	41,624,282
Total—Engines	39,899	$11,267,746	83,495	$16,969,968	39,985	$11,302,832	30,358	$14,517,341	30,383	$47,072,244
PARTS FOR ASSEMBLY		$86,474,518		$84,251,948		$50,776,001		$58,187,070		$60,819,532
REPLACEMENT PARTS										
Motorcycle parts and accessories		$984,915		$994,028		$368,889		$1,955,881		$4,057,354
Spark plugs	11,340,675	2,976,385	15,114,965	3,971,582	12,921,916	3,540,303	6,884,863	1,788,676	5,803,891	1,557,296
Parts for replacement, Other, n.e.s.		143,756,268		164,156,415		83,637,347		142,246,018		146,809,283
Auto horns, hand and electric	585,113	1,538,256	806,914	2,121,438	426,588	879,831	304,669	489,724	223,639	325,569
Auto accessories, n.e.s.		16,678,314		24,323,311		10,799,445		7,448,252		9,148,469
Brake lining, molded and semi-molded, lbs.*	1,601,413	2,238,135	3,308,517	2,907,716	2,495,990	1,837,752	2,185,463	1,580,652	2,068,968	1,467,692
Brake lining, not molded, lin. ft.*	681,384	404,085	949,449	552,244	740,670	368,680	353,028	236,099	321,019	193,443
Brake blocks, molded and semi-molded, lbs.*	238,853	168,368	570,080	448,214	411,932	297,778	285,113	218,374	361,728	251,543
Brake blocks, woven, lbs.*	223,282	26,809	54,386	45,951	28,146	23,603	7,374	7,715	14,880	16,839
Clutch facings, molded and semi-molded, units*	194,026	355,173	1,281,363	597,663	939,834	375,601	881,017	346,104	978,087	385,367
Clutch facings, woven, units*	373,979	195,784	355,037	197,025	256,407	124,445	479,829	209,891	434,477	182,286
Starting, Lighting and Ignition Equipment*		11,055,518		13,305,487		6,462,501		5,261,686		3,693,201
Batteries, storage, 6 and 12 volt*	622,198	7,284,940	606,166	6,631,115	407,425	2,949,777	720,925	6,813,114	581,210	4,929,007
Belts, fan for automobiles, lbs.	976,702	1,113,756	2,529,516	2,708,086	1,826,389	1,453,414	894,553	814,329	556,102	501,821
Total—Replacement Parts		$188,798,666		$222,958,255		$113,089,372		$169,416,515		$173,519,170
GARAGE EQUIPMENT										
Auto Tire Service Equipment and Parts		$824,802		$1,933,512		$1,595,304		$1,059,965		$808,629
Pumps for Gasoline and Oil	20,829	3,295,412	31,908	3,939,696	19,533	1,231,393	6,186	207,112	5,514	247,195
Service Appliances and Parts, Other		13,763,940		19,757,608		9,028,689		3,778,897		2,223,347
Total—Garage Equipment		$17,884,154		$25,630,816		$11,855,386		$5,045,974		$3,279,171
TIRES AND TUBES										
Casings, truck and bus	1,154,456	$50,082,524	1,930,331	$76,190,044	1,406,289	$51,503,072	1,450,189	$48,694,154	1,724,906	$50,681,972
Casings, other automobile	833,506	8,968,041	2,095,679	27,732,227	1,059,126	13,549,726	142,908	1,826,638	189,521	2,175,434
Inner tubes for cars, trucks and buses	1,201,469	4,445,408	2,976,396	10,440,633	1,873,214	7,429,495	1,317,815	4,200,261	1,957,073	5,189,381
Tires, solid for cars and trucks	111,232	3,092,000	271,490	6,717,979	42,670	1,284,752	15,246	550,857	4,221	168,180
Tire sundries and repair material, Camelback, lb.	1,395,244	397,160	6,888,664	1,892,256	6,733,524	1,768,631	1,795,595	453,777	730,904	184,925
Other Tire sundries and repair materials, lb.	1,881,596	947,065	5,423,489	2,629,818	5,922,499	3,205,636	2,633,709	1,411,183	2,650,921	1,495,993
Total—Tires and Tubes, etc.		$67,932,198		$125,403,157		$78,741,312		$57,136,870		$59,895,886
Total—All Products		$1,016,880,184		$1,299,495,514		$642,344,091		$670,142,843		$764,963,828

‡ Machinery and Motive Products Branch, Office of International Trade, Department of Commerce. * For all uses.

U. S. Imports for Consumption, 1939-1948

Year	New Trucks		New Truck and Bus Chassis		Other New Vehicles—Passenger Cars		Other Used Vehicles or Chassis		Total—New and Used Vehicles	
	Number	Value	Number	Value	Number	Value	Number	Value	Number	Value
1939	...	$	1	$800	298	$376,960	335	$139,684	634	$517,544
1940	...	...	...	...	253	401,214	302	140,207	555	541,421
1941	3	4,607	...	...	30	52,165	308	153,304	361	210,076
1942	26	205,214	1	800	25	19,333	372	174,832	424	400,179
1943	50	75,438	9	13,500	74	90,067	217	96,378	350	89,579
1944	26	81,876	1	1,845	11	14,639	298	161,657	336	260,017
1945	4	5,451	1	756	31	80,162	475	366,719	531	453,088
1946	8	11,711	7	8,328	1,374	1,415,127	574	365,218	1,963	1,800,384
1947	18	28,521	4	6,543	1,453	1,742,473	646	510,618	2,121	2,288,155
1948	423	520,007	261	219,537	28,047	29,637,141	381	357,959	29,112	30,734,644

* Machinery and Motive Products Branch, Office of International Trade, Dept. of Commerce.

1948 U. S. Imports of New Passenger Cars*

1948

IMPORTS FROM	Number	Value
Canada	122	$155,646
Mexico	2	1,745
Sweden	4	19,312
United Kingdom	25,277	27,009,366
Netherlands	3	9,392
France	2,669	2,372,003
Germany	1	952
Italy	19	68,725
Total	28,047	29,637,141

* Machinery and Motive Products Branch, Office of International Trade, Dept. of Commerce.

1948 U. S. Exports of New Wheel Type Tractors

1948

	Number	Value
Garden	11,369	$2,685,136
1 Plow	17,830	13,334,321
2 Plow	44,039	47,337,423
3 Plow	24,033	34,831,959
4 Plow	14,787	29,438,681
Total	112,058	$127,627,520
Tractor Engines	24,747	$5,201,037

1948 U. S. Imports of Used Vehicles*

1948

Imports from	Number	Value
Canada	291	$259,722
Mexico	20	22,726
Canal Zone	1	885
Bahamas	1	2,800
Sweden	2	6,000
United Kingdom	36	34,747
Netherlands	1	300
Belgium and Luxemburg	1	900
France	15	12,425
Germany	2	3,200
Italy	2	1,687
Switzerland	6	9,381
India	1	1,963
Union of South Africa	1	500
Australia	1	723
Total	381	$357,959

* Machinery and Motive Products Branch, Office of International Trade.

1948 U. S. Motorcycle Imports*

1948

IMPORTS FROM	Number	Value
Canada	39	$19,338
Mexico	2	800
Canal Zone	2	225
Bahamas	...	...
Sweden	1	228
United Kingdom	7,963	2,665,655
Netherlands	3	650
Belgium and Luxemburg	6	3,252
France	25	5,090
Germany	29	5,211
Austria	189	39,122
Czechoslovakia	3,510	647,934
Gibraltar	1	250
Italy	36	8,669
Saudi Arabia	1	50
Union of S. Africa	1	300
Total	11,808	$3,396,774

* Machinery and Motive Products Branch, Office of International Trade.

1948 Civil Aircraft Shipments—by Type*

In Units and Their Value

	PERSONAL		TRANSPORT		1948 TOTAL		1947 TOTAL	
	Number	Value	Number	Value	Number	Value	Number	Value
January	449	$2,018,069	13	$2,498,533	462	$4,516,602	2,116	$8,591,171
February	447	2,125,996	14	3,994,084	461	6,120,080	1,914	7,520,573
March	564	2,491,739	14	5,198,991	578	7,690,730	1,785	14,393,256
April	750	3,028,139	16	5,401,869	766	8,430,008	2,039	18,331,640
May	778	3,164,874	34	15,819,336	812	18,984,210	1,646	19,046,051
June	926	3,783,096	33	13,065,634	959	16,848,730	1,193	20,652,983
July	903	3,432,040	17	6,078,713	920	9,510,753	998	11,918,019
August	674	2,854,639	26	7,014,927	700	9,869,566	929	16,121,549
September	569	2,683,630	21	6,771,307	590	9,454,937	1,028	20,667,643
October	476	2,219,670	26	6,187,125	502	8,406,795	802	22,302,504
November	294	1,384,858	23	5,493,383	317	6,878,241	615	12,080,006
December	209	1,107,600	26	6,389,338	235	7,496,938	502	4,878,609
Total	7,039	$30,294,350	263	$83,913,240	7,302	$114,207,590	15,617	$176,504,004

* Industry Division, Bureau of the Census and Civil Aeronautics Administration.

Aviation data

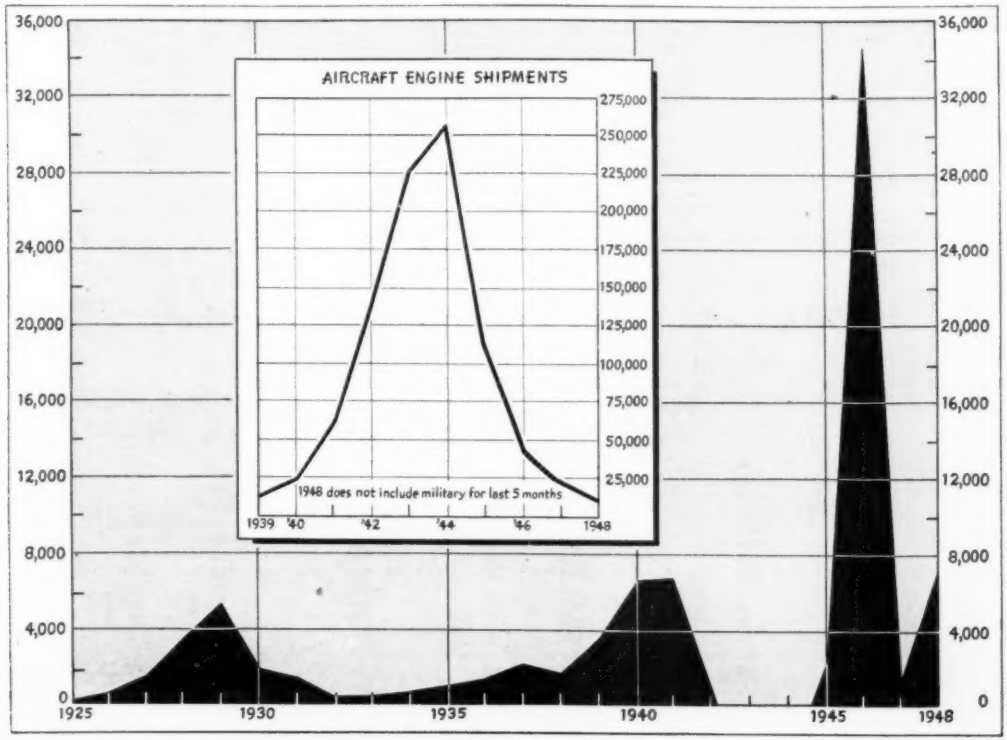
PRODUCTION ■ REGISTRATIONS ■ EXPORTS

Aircraft and Aircraft Engine Production

	AIRCRAFT				AIRCRAFT ENGINES	
	Civil‡	Military‡	Total†	Value†	Number†	Value†
1927	1,386	609	1,995	14,504,999	1,400	$9,493,696
1928	3,499	847	4,346		3,496	19,916,000
1929	5,357	677	6,631	51,508,120	6,276	24,966,083
1930	1,937	747	2,684		4,356	17,267,795
1931	1,582	812	2,468	21,790,000	3,794	13,779,791
1932	549	593	1,142		1,959	8,902,808
1933	591	466	1,179	15,859,995	1,822	8,651,247
1934	1,222	393	1,615		2,545	15,825,000
1935	1,109	459	1,365	17,454,331	2,866	12,610,285
1936	2,152	858	3,010		4,295	26,383,055
1937	2,281	949	3,100	38,664,153	6,214	28,576,971
1938	2,698	925	3,623			
1939	3,770	2,141	5,911	75,872,587	11,172	
1940	6,785	6,019	12,794	146,000,000	22,667	101,000,000*
1941	6,844	19,433	26,277	819,000,000	58,181	436,000,000*
1942	N.P.	47,836	47,836	2,762,000,000	138,089	1,314,000,000*
1943	N.P.	85,898	85,898	6,696,000,000	227,116	2,226,000,000*
1944	N.P.	96,318	96,318	9,233,000,000	256,911	3,075,000,000*
1945	2,047	47,714	47,714	5,141,000,000	109,650	1,650,000,000*
1946	35,001	1,669	36,670	362,772,192	43,407	126,860,393
1947	15,617	2,100	17,717	671,432,478	21,178	246,406,195
1948	7,302	.....	7,302§	114,207,590§	9,039§	30,017,250§

N.P. No production other than military. *—War Production Board and Civilian Production Administration. §—Civil production only.
†—Sources: Odd years 1919 through 1939, as reported by Census of Manufacturers. Other years, various sources. Total units produced 1940-1948 as reported by Civil Aeronautics Administration and Bureau of the Census. Value of airframes 1940-1945, Department of Commerce. ‡—Do not add up to totals shown because of difference in sources.
NOTE:—The values of engines, propellers and power plant accessories installed in the aircraft are not included in the value of the aircraft reported for 1931 to 1948.

CIVIL AIRCRAFT PRODUCTION, 1925-1948



Shipments of Complete Aircraft and Other Products of Aircraft Plants—1948

In Units and Their Value

	COMPLETE AIRCRAFT		Parts, Value	Other Products, Value	TOTAL VALUE	
	Number	Value			1948	1947
January	462	$4,516,602	$1,765,706	$3,006,683	$9,288,991	$14,765,173
February	461	6,120,080	2,197,677	2,848,626	11,166,383	13,622,262
March	578	7,690,730	1,850,068	2,918,653	12,459,451	20,833,396
April	786	8,430,008	1,690,639	2,895,797	13,016,444	24,484,402
May	812	18,984,210	1,980,243	2,345,754	23,310,207	25,526,278
June	959	16,848,730	1,935,881	3,028,418	21,813,029	26,564,410
July	920	9,510,753	1,766,985	1,812,833	13,090,571	17,108,410
August	700	9,869,566	1,881,639	1,955,667	13,706,872	21,176,044
September	590	9,454,937	1,871,511	2,243,491	13,569,939	26,060,423
October	502	8,406,795	2,067,110	1,709,818	12,183,723	27,794,190
November	317	6,878,241	1,185,753	1,850,133	9,914,127	16,479,611
December	235	7,496,938	2,432,949	1,991,829	11,921,716	10,561,599
Total	7,302	$114,207,590	$22,626,161	$28,607,702	$165,441,453	$244,976,198

*—Industry Division, Bureau of the Census and Civil Aeronautics Administration.

1948 Civil Aircraft Engine Shipments and Other Products of Their Plants*

In Units and Their Value

	Engines		Parts, Value	Other Products, Value	Total—Value All Products	
	Number	Value			1948	1947
January	779	$3,149,199	$1,572,186	$88,658	$4,790,043	$10,165,636
February	1,007	3,562,073	1,818,472	73,488	5,454,033	9,308,542
March	1,093	2,872,478	2,302,297	89,527	5,264,302	8,473,524
April	975	3,220,452	2,014,309	285,699	5,520,460	9,684,823
May	1,293	2,922,932	1,878,590	268,972	5,070,494	8,650,241
June	1,458	6,543,817	2,347,919	300,162	9,191,898	8,222,895
July	641	1,088,043	2,115,412	169,738	3,373,193	5,441,736
August	660	1,484,958	1,990,784	173,649	3,649,391	3,961,019
September	428	1,877,993	2,458,247	122,650	4,458,890	4,016,236
October	220	787,120	1,720,481	111,138	2,618,739	6,757,640
November	193	1,169,904	2,036,197	113,362	3,319,463	3,979,555
December	312	1,338,281	1,945,517	146,026	3,429,824	3,617,347
Total	9,059	$30,017,250	$24,200,411	$1,923,069	$56,140,730	$82,279,194

*—Industry Division, Bureau of the Census and Civil Aeronautics Administration.

1948 Civil Aircraft Shipments—by Months*

Classified by Total Rated Horsepower and Number of Places

	Total Rated Horsepower				Total Aircraft	Number of Places		
	1-74	75-99	100-399	400 & Over		2	3-5	Over 5
January	63	148	245	15	471§	229	216	26
February	35	160	256	16	467§	221	228	18
March	135	157	277	16	585§	337	222	26
April	206	222	316	22	766	461	271	34
May	125	184	467	36	812	337	475	‡
June	266	182	476	35	959	482	444	33
July	238	204	459	19	920	473	430	17
August	105	103	465	27	700	242	432	26
September	95	90	382	23	590	208	361	21
October	64	71	340	27	502	156	320	26
November	49	41	204	23	317	99	195	23
December	†	47	161	27	235	57	152	26
Total	1,381	1,609	4,048	286	7,324§	3,302	3,746	276

†—Included with 75-99 hp. ‡—Included with 3-5 place aircraft.
*—Industry Division, Bureau of the Census and Civil Aeronautics Administration.
§—Difference in totals shown in other tables due to revisions of which no record is available at present.

Airports and Landing Fields, by Types, by Years*

(As of the End of the Calendar Year)

Year	Commercial	Municipal	CAA Intermediate	All Others	Total Airports	Total Lighted Airports
1933	938	827	265	158	2,188	626
1934	872	980	259	186	2,297	664
1935	822	1,041	291	214	2,368	698
1936	774	1,037	296	235	2,342	705
1937	727	1,053	283	236	2,299	720
1938	760	1,092	267	255	2,374	719
1939	801	963	266	250	2,280	735
1940	860	1,031	289	151	2,331	776
1941	930	1,086	283	185	2,484	662
1942	1,069	1,129	273	338	2,809	700
1943	801	914	240	814	2,769	859
1944	1,027	1,067	229	1,104	3,427	964
1945	1,509	1,220	216	1,081	4,026	1,007
1946	1,929	1,424	201	936	4,490	1,019
1947	2,849	1,818	178	914	5,759	1,447
1948	2,989	2,050	161	1,214	6,414	.....

*—Civil Aeronautics Administration.

Civil Aircraft Registrations—Airports in Use*

STATE	Registrations of Civil Aircraft, July 1, 1948	TYPE OF OPERATION (1)					Total Airports	SIZE CLASSIFICATION (2)					
		Commercial	Municipal	CAA Intermediate	Military	All Others		Sub I (2) and I	II	III	IV	V	VI and Over
Alabama	1,003	43	32	2	15	5	97	51	17	14	13	0	2
Arizona	1,248	43	40	8	44	55	187	78	44	38	14	12	3
Arkansas	1,157	46	30	0	15	91	182	85	13	15	8	0	0
California	10,639	193	142	9	39	80	463	259	89	41	36	35	23
Colorado	1,370	33	44	3	3	18	101	54	24	13	1	4	5
Connecticut	730	23	10	0	0	0	33	24	1	3	4	1	0
Delaware	235	15	2	0	1	2	20	13	4	0	1	0	2
Dist. of Col.	877	0	0	0	2	1	3	0	0	0	1	1	1
Florida	2,989	50	93	2	55	8	208	58	32	44	48	11	15
Georgia	1,813	51	51	5	11	23	141	59	28	24	23	4	3
Idaho	818	13	56	3	2	35	109	84	11	9	2	0	3
Illinois	4,675	130	31	3	4	9	177	126	36	4	7	4	0
Indiana	2,772	129	30	1	6	4	169	115	34	9	9	2	0
Iowa	2,373	101	50	3	2	27	183	150	23	2	7	0	1
Kansas	3,099	87	66	3	11	15	202	141	22	16	8	10	5
Kentucky	888	43	12	1	2	9	67	58	2	4	4	0	1
Louisiana	1,057	27	30	4	6	28	95	54	17	10	9	2	3
Maine	641	39	24	0	3	7	73	49	6	12	2	2	2
Maryland	1,118	30	5	0	7	10	52	24	15	3	8	0	2
Massachusetts	1,484	53	21	0	4	2	80	57	4	9	7	0	3
Michigan	4,717	115	109	0	5	6	235	171	38	10	13	2	1
Minnesota	2,132	53	70	0	0	0	123	81	30	6	4	1	1
Mississippi	726	39	35	6	4	10	94	57	15	13	7	0	2
Missouri	2,432	67	40	5	3	4	119	75	24	11	5	3	1
Montana	956	16	58	10	1	16	101	64	18	8	5	2	4
Nebraska	1,697	58	56	4	2	17	137	103	18	0	4	2	10
Nevada	427	21	22	8	5	5	59	21	5	14	9	9	1
New Hampshire	318	16	12	0	1	3	32	21	5	3	2	0	1
New Jersey	1,670	71	11	0	5	6	93	63	17	7	4	0	2
New Mexico	808	31	33	11	8	28	111	68	14	6	9	8	6
New York	4,827	178	47	2	8	41	276	215	30	12	13	4	2
North Carolina	1,639	93	35	1	13	9	151	103	14	16	12	2	4
North Dakota	972	38	47	6	0	0	91	67	15	3	6	0	0
Ohio	4,672	195	34	4	4	14	251	190	41	9	7	2	2
Oklahoma	2,479	71	79	2	6	8	165	105	24	14	13	6	3
Oregon	1,771	37	44	4	0	30	115	75	9	12	14	4	1
Pennsylvania	4,557	174	39	3	5	4	225	171	33	13	6	0	0
Rhode Island	212	7	2	0	2	0	11	7	0	2	0	2	0
South Carolina	636	20	37	2	6	3	67	30	13	5	10	6	3
South Dakota	834	23	41	1	1	2	68	51	6	3	4	2	2
Tennessee	1,308	41	23	7	2	5	78	40	24	7	6	1	0
Texas	8,148	192	156	21	70	185	624	371	113	61	43	27	9
Utah	549	7	37	8	4	3	59	24	11	15	4	4	1
Vermont	208	12	9	0	1	1	23	19	0	4	0	0	0
Virginia	1,463	69	23	2	14	19	127	88	14	10	11	2	2
Washington	2,182	56	69	4	11	24	164	102	23	10	17	5	7
West Virginia	685	35	11	2	0	4	52	38	10	2	3	1	0
Wisconsin	2,163	91	56	1	2	7	157	115	28	9	3	1	1
Wyoming	476	14	28	5	1	9	55	27	15	6	3	3	1
Total	96,730	2,989	2,050	161	398	816	6,414	4,065	1,009	561	448	187	145

(1)—**Airport type definitions:**—Commercial—Public use and public services, privately owned and operated. Municipal—Public use and public service, municipally owned and/or operated. CAA Intermediate—Public emergency use, no services CAA operated. Military—Public restricted, military operated. All Others—Public emergency use only, no public services, privately owned for personal use.

(2)—Sub I airports are those which exist but do not come up to Class I standards.

(3)—Class I are for private owners of smaller type aircraft; Class II, private owners of largest type aircraft and feeder transport aircraft; Classes IV and over, largest aircraft now in use and those planned for immediate future.

* **Source of data:**—Civil Aeronautics Administration as of January 1, 1949.

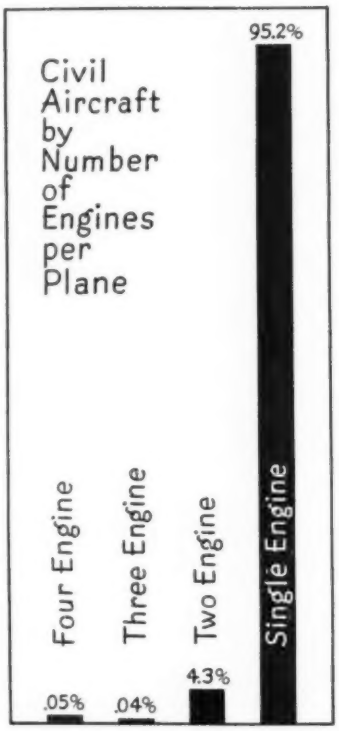
Registered Civil Aircraft* by HP Classifications

Registered Civil Aircraft
by Engine Classifications

	Number of Aircraft
Number of Engines:	
Single Engine	86,656
Two Engine	3,877
Three Engine	36
Four Engine	474
Total	91,043
Unspecified	5,971
Gliders	577
Lighter-than-air	15
Balloons	13
Total—All Aircraft	97,619

Single-Engine Civil Aircraft
by HP Classifications

	Number of Aircraft
Total Take-off Hp:	
50 and under	2,730
51-70	36,138
71-100	20,253
101-200	14,417
201-350	7,557
351-500	4,491
501-700	998
701-1000	8
1001-1300	30
1301-1600	22
1601-2500	11
2501 and over	1
Total	86,656



Two-Engine Civil Aircraft
by HP Classifications

	Number of Engines
Total Take-off Hp:	
60-449	154
450-999	2,371
1000-1999	89
2000-2999	1,086
3000-3999	78
4000 and over	99
Total	3,877

Three-Engine Civil Aircraft
by HP Classifications

	Number of Engines
Total Take-off Hp:	
300-700	23
701-1000	9
1001-1725	4
Total	36

Four-Engine Civil Aircraft
by HP Classifications

	Number of Aircraft
Total Take-off Hp:	
1800-4999	18
5000-5999	243
6000-8800	210
8801 and over	3
Total	474

Registered Civil Aircraft by Major Manufacturers*

Includes Experimental Aircraft and Those in Territories

(As of August 1, 1948)

Manufacturer	Number of Aircraft
Aeronca Aircraft	12,649
Aircraft Mechanics	24
American Aeronautical	6
American Aircraft	6
American Airplane and Engine	4
American Eaglecraft	11
Applegate & Weyant Engineering	48
Arrow Aircraft and Motors	12
Beech Aircraft	2,414
Bell Aircraft	135
Bellanca Aircraft	503
Boeing Aircraft	37
Boeing Airplane	4,345
Brewster Aeronautical	114
Buhl Aircraft	16
Call Aircraft	20
Cessna Aircraft	9,059
Command-Aire	14
Commonwealth Aircraft	546
Consolidated Vultee Aircraft (Stinson)	5,885
Consolidated Vultee Aircraft	5,136
Culver Aircraft	646
Curtiss-Wright	484
Davis Aircraft	11
Douglas Aircraft	1,622
Engineering & Research	4,482
Fairchild Aircraft	5,627
Fleet Aircraft	46
Ford Motor	11
Funk Aircraft	301
General Aircraft	18
General Airplane	7
Globe Aircraft	1,231
Goodyear Aircraft	19
Great Lakes Aircraft	47
Grumman Aircraft Engineering	278
Harlow Aircraft	435
Hartman Aircraft	15
Howard Industries	416
Inland Aviation	6
Johnson Aircraft	22
Kellet Aircraft	3
Kinners Motors	25
Laird Airplane	10
Lockheed Aircraft	393
Luscombe Airplane	4,896
Martin Aircraft, Glenn L.	25
Moth Aircraft	5
Myers Aircraft	91
Naval Aircraft	462
Nicholas-Beasley Airplane	7
Noorduyn Aviation	158
North American Aviation	2,279
Northwestern Aeronautical	473
Perth-Amboy Title	72
Piper Aircraft	19,898
Pitcairn Autogiro	21
Republic Aviation	828
Roe & Company	1
Roos Aircraft	23
Ryan Aeronautical	679
Ryan Aircraft	14
Sioux Aircraft	5
Spartan Aircraft	39
Star Aircraft	5
State Securities	24
Stearman Aircraft	47
Swallow Airplane	6
Taylorcraft	7,773
Timm Aircraft	180
United Aircraft (Sikorsky)	41
Universal Moulded Products	250
Viking Flying Boat	10
Waco Aircraft	1,132
White Aircraft	17
Total	96,600
Miscellaneous Makes	414
Gliders and Lighter-than-air	605
Total—All Types	97,619

* Count by Civil Aeronautics Administration.

U. S. Exports of Aeronautic Products, by Years, 1912-1948*

	Aircraft		Aircraft Engines		Parts, Accessories and Equipment	Total Aeronautic Exports
	Number	Value	Number	Value	Value	Value
1912	29	$105,805	.....	.....	.....	$105,805
1913	29	81,750	.....	.....	$25,802	107,552
1914	34	188,924	.....	.....	37,225	226,149
1915	152	958,019	.....	.....	583,427	1,541,446
1916	269	2,158,395	.....	.....	4,843,610	7,002,005
1917	135	1,001,542	.....	.....	3,133,903	4,135,445
1918	61	768,720	.....	.....	18,017,781	18,786,501
1919	44	215,300	.....	.....	3,249,226	3,464,526
1920	65	598,274	.....	.....	554,375	1,152,649
1921	48	314,940	.....	.....	157,608	472,548
1922	37	156,630	147	$72,819	265,481	494,930
1923	48	309,051	80	65,558	58,949	433,558
1924	59	412,738	146	219,609	165,926	798,273
1925	80	511,282	73	170,793	101,584	783,659
1926	50	303,149	297	573,732	150,329	1,027,210
1927	63	848,568	84	484,875	570,117	1,903,650
1928	162	1,759,653	179	664,826	1,240,244	3,664,723
1929	348	5,484,600	322	1,383,197	2,257,548	9,125,345
1930	321	4,819,669	376	1,634,985	2,363,456	8,818,110
1931	140	1,812,809	307	1,432,229	1,622,649	4,867,687
1932	280	4,358,967	2,356	1,517,682	1,756,421	7,946,533
1933	406	5,391,493	2,903	1,452,341	2,249,172	9,180,328
1934	490	8,195,484	1,009	4,458,701	4,860,567	17,622,938
1935	333	6,598,515	568	2,459,317	5,069,810	14,290,843
1936	527	11,601,893	933	5,182,469	6,060,483	23,143,203
1937	631	21,085,170	1,048	5,946,054	12,105,474	39,404,469
1938	876	37,977,924	1,309	7,899,844	21,948,982	68,227,689
1939	1,221	67,112,866	1,880	14,120,035	36,574,311	117,807,212
1940	3,531	196,265,646	4,986	49,873,823	65,732,004	311,871,473
1941	6,011	422,763,907	8,144	81,692,907	122,472,538	626,929,352
1942	14,603	882,247,253	14,603	160,575,340	352,123,928	1,394,946,521
1943	13,885	1,216,900,646	21,803	243,649,570	684,061,278	2,144,611,494
1944	24,489	1,657,692,974	25,751	335,085,521	833,150,100	2,825,928,595
1945	7,672	664,105,257	9,351	126,209,929	373,294,565	1,163,609,751
1946	2,406	65,293,732	2,490	11,851,372	38,178,056	115,323,160
1947	3,163	74,501,393	4,138	18,075,058	79,567,847	172,144,298
1948	2,262	66,358,190	3,932	14,337,146	76,152,078	156,847,414

* Machinery and Motive Products Branch, Office of International Trade, Department of Commerce.

U. S. Exports of Aeronautic Products*

Segregated by Type of Product for 1945-1948

	1948		1947		1946		1945	
Type of Product	Number	Value	Number	Value	Number	Value	Number	Value
AIRCRAFT								
Airplanes, civil, new and used	1,153	$ 4,807,847	1,942	$ 7,159,693	2,243	$ 64,200,532	387	$ 9,197,206
Bombers	40	547,000	38	457,500	.....	.....	1,547	274,938,100
Fighters	35	1,310,000	47	410,000	16	12,800	3,844	242,497,660
Transports, new and used, cargo and passenger	505	56,239,597	500	60,103,435	2	215,932	1,238	120,062,444
Trainers	478	2,467,084	563	5,131,844	41	828,485	550	14,587,777
Communication	.....	.....	.....	.....	.....	.....	42	1,812,751
Balloons and miscellaneous aircraft	3	50,000	.....	.....	50	2,500	10	750
Gliders: Lighter-than-air, rotary wing	50	1,936,662	73	1,238,921	54	33,483	54	1,008,569
Total—Aircraft	2,262	$ 66,358,190	3,163	$ 74,501,393	2,406	$ 65,293,732	7,672	$ 664,105,257
AIRCRAFT ENGINES	3,932	$ 14,337,146	4,138	$ 18,075,058	2,490	$ 11,851,372	9,351	$ 126,209,929
PARTS AND ACCESSORIES								
Engine parts and accessories	.....	29,509,469	.....	$ 28,838,297	.....	$ 12,855,376	.....	$ 87,496,206
Propellers	1,983	1,848,867	2,479	1,975,795	1,594	1,007,234	15,688	21,318,969
Propeller parts and accessories	.....	1,612,047	.....	1,553,331	.....	767,593	.....	14,490,615
Instruments and parts	46	10,439	.....	4,998,215	.....	2,192,365	.....	11,030,056
Bomb sights and parts	.....	1,373	.....	.....	.....	245	2,800	6,845,545
Parachutes and other aerial delivery equipment	.....	1,590,174	.....	10,941,700	.....	783,697	.....	1,283,961
Radio transmitters and receiving sets	3,401	1,362,479	.....	.....	2,119	3,272,752	26,806	138,364,540
Radio ground equipment	.....	1,802,972	.....	.....	.....	.....	.....	.....
Ground handling and maintenance equipment	.....	2,242,986	.....	2,631,716	.....	.....	.....	.....
Aircraft parts and components	.....	33,021,055	.....	26,670,346	.....	.....	.....	32,608
Parts and accessories, other	.....	4,150,217	.....	1,958,447	.....	17,298,794	.....	92,722,066
Total—Parts and Accessories	.....	$ 76,152,078	.....	$ 79,567,847	.....	$ 38,178,056	.....	$ 373,294,565
Total—Aeronautic Exports	.....	$156,847,414	.....	$172,144,298	.....	$115,323,160	.....	$1,163,609,751

* Machinery and Motive Products Branch, Office of International Trade, Department of Commerce.

1949 PASSENGER CAR SPECIFICATIONS

CHASSIS AND ENGINE SPECIFICATIONS

The specifications shown on this and the following pages pertaining to 1949 passenger cars are only for the standard equipment included in Factory Delivered Price. Optional equipment shown in a few instances is at extra cost.

Line Number	PASSENGER CAR MAKE AND MODEL	Wheelbase (In.)	Tread (In.) Front	Tread (In.) Rear	Overall Dimensions (In.) Length—Including Bumper and Bumper Guards	Overall Dimensions (In.) Width	Overall Dimensions (In.) Height—Road to Roof, No Load	Shipping Weight (Lb.) Cheapest 5 Pass. 4 Door Sedan or Equivalent	Tire Size (In.)	ENGINE Valve Arrangement	Number of Cylinders, Bore and Stroke (In.)	Total Piston Displacement (Cu. In.)	Taxable Horsepower	Max. Brake Hp. at Specified R.P.M. With Bare Engine	Max. Brake Hp. at Specified R.P.M. With Standard Accessories	Max. Torque (Lb. Ft.) at Specified R.P.M. With Bare Engine	Max. Torque (Lb. Ft.) at Specified R.P.M. With Standard Accessories	Standard Compression Ratio (to 1)	Compression Pressure Pressure (Lb.)	Compression Pressure At What R.P.M.	Weight per Cu. In.* 5 Pass. 4 Door Sedan	Weight per Hp.* (With Accessories) 5 Pass. 4 Door Sedan	Hp. (With Accessories) per Cu. In.	Performance Factor** (Cu. In. per ton-feet)	Crankshaft Revolutions per Mile††	Line Number
1	Buick Special 40	121	58⅞	61½	207½	77⅞	66‡‡	3895	6.50-16	In	8 3⅛x4½	248.1	30.6	110 3600	105 3500	206 2000	202 2000	6.30	112	Cs	16.91	39.95	.423	35.95	3142	1
2	Super 50	121	59⅛	62⅞	209⅝	78⅛	65½	3835	7.60-15	In	8 3⅛x4½	248.1	30.6	115 3600	110 3500	212 2000	208 2000	6.60	114	Cs	17.47	39.41	.443	35.55	3216	2
3	Roadmaster 70	126	59⅛	62⅞	214⅛	78⅛	65½	4205	8.20-15	In	8 3⅛x4½	320.2	37.8	150 3600	139 3300	280 2000	271 2000	6.90	118	Cs	14.69	33.85	.434	37.50	2837	3
4	Cadillac 61	126	59	63	215⅞	78½	63⅛	3950	8.20-15	In	8 3½x3½	331.0	46.5	160 3800	141 3400	312 1800	297 1800	7.50	130	Cs	13.44	31.56	.426	37.68	2600	4
5	62	126	59	63	215⅞	78½	63⅛	3980	8.20-15	In	8 3½x3½	331.0	46.5	160 3800	141 3400	312 1800	297 1800	7.50	130	Cs	13.53	31.77	.426	37.43	2609	5
6	60	133	59	63	226⅛	78⅞	63⅛	4150	8.20-15	In	8 3½x3½	331.0	46.5	160 3800	141 3400	312 1800	297 1800	7.50	130	Cs	14.05	32.98	.426	36.07	2609	6
7	75	136⅛	58½	62½	226	82⅞	68½	4665	7.50-16	In	8 3½x3½	331.0	46.5	160 3800	141 3400	312 1800	297 1800	7.50	130	Cs	15.61	36.63	.426	35.63	2904	7
8	Chevrolet GJ-GK	115	57	58⅛	196½	74	66⅛	3075	6.70-15	In	6 3½x3½	216.5	29.4	90 3300	83 3200	174 (a)	168 1100	6.60	110	Cs	16.51	43.07	.383	35.76	3080	8
9	Chrysler C-45	125½	56	57	203½	73⅛	65⅝		7.60-15	L	6 3¼x4½	250.6	28.3	116 3600		208 1600		7.00					.463†		2812	9
10	C-46	131½	56⅝	58½	210	74½	66		8.20-15	L	8 3¼x4½	323.5	33.8	135 3200		270 1600		7.25					.417†		2706	10
11	C-47	145½	56⅝	63⅛					8.90-15	L	8 3¼x4½	323.5	33.8	135 3200		270 1600		7.25					.417†		2388	11
12	Crosley CD	80	40	40	145	49	57	1115	4.50-12	In	4 2½x2¼	44.0	10.0		26.5 5400		33.5 3000	7.80	130	260	38.71	60.94	.602†	26.46	5067	12
13	De Soto S-13	125½	56	57	206¾	73½	65¾		7.60-15	L	6 3⅛x4½	236.7	28.3	112 3600		195 1600		7.00					.473†		2812	13
14	Dodge D-29	115	56	57	197⅞	72½	64¾		6.70-15	L	6 3⅛x4½	230.2	25.3	103 3800		190-1200		7.00					.447†		2894	14
15	D-30	123½	56	57	203⅝	72⅞	65½	3385	7.10-15	L	6 3⅛x4½	230.2	25.3	103 3800		190-1200		7.00			16.88	37.71†	.447†	34.41	2997	15
16	Ford 6-98HA	114	56	56	196.8	71.7	64.7	2990	6.00-16	L	6 3.30 4.40	225.8	26.1	95 3300		180-1200		6.80	110	60	15.46	38.74†	.421†	34.32	2738	16
17	V8-98BA	114	56	56	196.8	71.7	64.7	3030	6.00-16	L	8 3⅛x3¼	239.4	32.5	100 3600		181-2000		6.80	90 110	95 110	14.74	35.30†	.418†	35.97	2736	17
18	Frazer 495-496	123½	58	60	207⅞			3455	7.10-15	L	6 3⅛x4½	226.2	26.3	112-3600		180-1400		7.30	120	70	17.48	35.31†	.495†	33.14	2990	18
19	Hudson 6, 491-492	123⅞	58½	55½	207½	77⅛	60⅜	3500	7.10-15	L	6 3⅛x4½	262.0	30.4	121-4000		200-1600		6.50			15.27	33.06†	.462†	38.04	2997	19
20	8, 493-494	123⅞	58½	55½	207½	77⅛	60⅜	3525	7.10-15	L	8 3⅛x4½	254.0	28.8	128 4200		198-1600		6.50	119	125	15.85	31.44†	.504†	36.65	2997	20
21	Kaiser 491-492	123½	58	60	206¼			3345	7.10-15	L	8 3⅛x4½	226.2	26.3	100-3600*		180-1400		7.30	120	70	17.00	38.45†	.418†	34.09	2990	21
22	Lincoln 9EL-9EH	121•	58½	60	220	79.0	68.3‡	4315	8.20-15	L	8 3⅝x3¾	336.7	39.2	152 3600		265 2000		7.00	110		14.30	31.68†	.451†	36.75	2636	22
23	Mercury 9CM	118	58½	60	206.8	76.9	64.8	3430	7.10-15	L	8 3⅜x4	255.4	32.5	110-3600		200-2000		6.80	115		15.39	35.73†	.431†	36.00	2856	23
24	Nash 600-4940	112	54½	59½	201	77.5	63.0	2905	6.40-15	L	6 3½x3¾	172.6	23.4	82-3800		138-1600		7.00	120	350	19.73	41.52†	.475†	32.90	3348	24
	Ambassador-4960	121	54½	59½	210	77.5	63.5	3320	7.10-15	In	6 3½x4½	234.8	27.3	112-3400		208-1600		7.02	125	350	16.27	34.11†	.477†	35.70	2997	25
26	Oldsmobile Futuramic-76	119½	57	59	202	75⅞	62½	3324	7.10-15	L	6 3½x4½	257.1	29.9	105-3400	99 3400	202-1400	197-1400	6.50	125	Cs	14.87	38.63	.385	39.05	2997	26
27	Futuramic-88	119½	57	59	202	75⅞	63½	3615	7.60-15	In	8 3½x3⅛	303.7	45.0	135 3800	129 3600	263-1800	255 1800	7.25	136	Cs	13.55	31.90	.425	33.28	2329	27
28	Futuramic-98	125	58	61½	213	78¼	63½	3892	7.60-15	In	8 3½x3⅛	303.7	45.0	135 3600	129 3600	263-1800	255 1800	7.25	136	Cs	14.46	34.05	.425	37.65	2617	28
29	Packard 8, 2201-2211	120	58½	60½	204⅝	77½	64¼	3755	(b)	L	8 3⅛x4¼	327.0	39.2	145 3600		268-2000		7.00			13.77	32.73†	.451†	37.38	2997	29
30	Super 8, 2202-22-32	120 141	58½	60½	204⅝	77½	64¼	3855	(b)	L	8 3⅛x4¼	327.0	39.2	145 3600		268-2000		7.00			13.32	30.03†	.443†	40.88	2812	30
31	Cust. 8, 2206-26-33	127 148	60½	60½	212⅝	77½	64½	4175	(c)	L	8 3⅛x4¼	356.0	39.2	160 3600		282-2000		7.00			13.13	29.22†	.449†	40.12	2713	31
32	Plymouth P-17	111	55	56	185⅞	72	64½		6.40-15	L	6 3⅛x4⅝	217.8	25.3	97-3600		175-1200		7.00					.445†		2966	32
33	P-18	118½	55	56	191½	71⅞	65½		6.70-15	L	6 3⅛x4⅝	217.8	25.3	97-3600		175-1200		7.00					.445†		2894	33
34	Pontiac 6-25	120	58	59	202½	73⅞	63¼	3280	7.10-15	L	6 3⅛x4	239.2	30.4	93-3400	87.5 3200	183-1200	186 1100	6.50	191	1000	15.80	43.20	.386	36.78	2997	34
35	8-27	120	58	59	202½	73⅞	63¼	3370	7.10-15	L	8 3⅛x3¼	248.9	33.8	106-3800		194-2200	190 2000	6.50	189	1000	15.55	36.51†	.426†	37.38	2997	35
36	Studebaker 6G	112	56¼	54	190½	69½	60¾	2720	5.50-15	L	6 3x4	169.6	21.6	80-4000		134-2000		6.50	105	150	18.96	40.25†	.472†	32.91	3227	36
37	16A 119 123	55	54	204½†	69½	61⅝	3195	6.50-15	L	6 3⅛x4½	226.2	26.3	94-3800		176-1600		6.50	105	150	16.33	39.31†	.416†	36.00	3035	37
38	Willys Jeepster VJ-2	104	55½	57	174½	69½	63¼	2394	5.90-15	L	4 3⅛x4½	134.2	15.6	63-4000		106-2000		6.48			21.56	45.94†	.469†			38
39	4-63	104	55¼	57	174½	68		2898	6.00-15	L	4 3⅛x4½	134.2	15.6	63-4000		105 2000		6.48	110	160	25.32	53.94†	.469†	28.22	3694	39
40	6-63	104	58½	57	174½	68½	72½	2845	6.50-15	L	6 3x3½	148.5	21.6	72-4000		117-1600		6.42			22.53	46.46†	.485†	34.34	3092	40

ABBREVIATIONS

•—Model 492 is 112 at 3600 R.P.M.
▲—Model 9EH is 125" wheelbase
♦—With load
‡—Model 9EH overall height 64.2"
†—Based on Bare Engine Hp
♦—Land Cruiser 208½

(a)—At 1200 to 2000 R.P.M.
(b)—Models 2202 and 2232 use 7.60/15—Model 2222 uses 7.00/15
(c)—Models 2206 and 2233 use 8.20/15—Model 2226 uses 7.00/16
CS—Cranking speed

In—In head (valves)
L—L" head (valves)
*—All weight calculations are based on shipping weight plus an allowance of 500 lb. for passengers, water, gasoline and oil.

**—An explanation of the formula used for this calculation will be found on page 158
††—Calculated on the basis of tire revolutions per mile times the standard rear axle ratio

For page on which Directory of Manufacturers appears, see Table of Contents page 65

1949 PASSENGER CARS

PISTONS, RINGS AND CONNECTING RODS

Line Number	PASSENGER CAR MAKE AND MODEL	Number of Cylinders Bore and Stroke (In.)	PISTONS: Make	Material	Features	Weight, Oz., Without Rings, Pin and Bushing	Length (In.)	Average Clearance (In.): Top Land	Average Clearance (In.): Bottom of Skirt	Average Ring Groove Depth (In.): Oil	Average Ring Groove Depth (In.): Compression	PISTON RINGS: Oil: Number Used	Oil: Width (In.)	Oil: Average Gap (In.)	Oil: Maximum Wall Thickness (In.)	Compression: Number Used	Compression: Width (In.)	Compression: Average Gap (In.)	Compression: Maximum Wall Thickness (In.)	Expanders Used—	WRIST PIN: Length (In.)	Diameter	Locked In—	Average Clearance, in Piston (In.)	CONNECTING RODS: Length (In.), Center to Center	Materials (S.A.E. No.)	Weight (Oz.)	Line Number
1	Buick Special 40	8-3 3/8 x4 1/2	Var	Al	C,Tu,Trs	13.77	4.328	.0265	.0015	.166	.166	2	(a)	(b)	(c)	2	.0937	.015	(d)	N	2.687	.8125	R	.00035	7 5/16	1045	28.48	1
2	Super 50	8-3 3/8 x4 1/2	Var	Al	C,Tu,Trs	13.77	4.328	.0265	.0015	.166	.166	2	(a)	(b)	(c)	2	.0937	.015	(d)	N	2.687	.8125	R	.00035	7 5/16	1045	28.48	2
3	Roadmaster 70	8-3 1/8 x4 1/2	Var	Al	C,Tu,Trs	17.94	4.562	.0295	.0017	.182	.182	2	(a)	(b)	(e)	2	.0937	.015	(f)	N	3.062	.8750	R	.00035	8 1/4	1045	35.58	3
4	Cadillac 61	8-3 1/2 x3 5/8	A-B	Al	Ts,Sf	19.29	3.937	.0330	.0005	.187	.187	1	.1875	.015	.165	2	.0781	.015	.184	N	2.750	1.000	F	.00007	8 1/16	1035	24.53	4
5	62	8-3 1/2 x3 5/8	A-B	Al	Ts,Sf	19.29	3.937	.0330	.0005	.187	.187	1	.1875	.015	.165	2	.0781	.015	.184	N	2.750	1.000	F	.00007	8 1/16	1035	24.53	5
6	60	8-3 1/2 x3 5/8	A-B	Al	Ts,Sf	19.29	3.937	.0330	.0005	.187	.187	1	.1875	.015	.165	2	.0781	.015	.184	N	2.750	1.000	F	.00007	8 1/16	1035	24.53	6
7	75	8-3 1/2 x3 5/8	A-B	Al	Ts,Sf	19.29	3.937	.0330	.0005	.187	.187	1	.1875	.015	.165	2	.0781	.015	.184	N	2.750	1.000	F	.00007	8 1/16	1035	24.53	7
8	Chevrolet GJ-GK	6-3 1/16 x3 3/4	Own	CAl	Fh,O,Sa	25.76	3.750	.0195	.0022	.176	.156	1	.1862	.010	.155	2	.1237	.010	.155	N	3.150	.8647	R		6 11/16	DFS	30.7	8
9	Chrysler C-45	6-3 1/16 x4 1/2		Al	Us,C,Tp	18.50	3.875	.0305	.0007	.178	.176	2	.1562	.011	.150	2	.0937	.011	.169	N	2.875	.8593	F	.00025	7 1/8	HMS	32.4	9
10	C-46-47	8-3 1/16 x4 1/2	Own	Al	Us,C,Tp	16.50	3.875	.0305	.0007	.172	.171	2	.1562	.011	.145	2	.0937	.011	.162	N	2.750	.8593	F	.00025	9	HMS	34.0	10
11	Crosley CD	4-2 1/2 x2 1/4	Own	Al	Ao,C	6.50	1.906	.0165	.0030	.131	.131	2	.1547	.011	.117	2	.0622	.012	.120	N	2.260	.6251	F	.00035	4 1/16	3140	9.62	11
12	De Soto S-13	6-3 1/16 x4 1/4		Al	Us,C,Tp	18.50	3.875	.0305	.0007	.178	.176	2	.1562	.011	.150	2	.0937	.011	.169	N	2.875	.8593	F	.00025	8	HMS	34.1	12
13	Dodge D-29-30	6-3 1/16 x4 5/8		Al	Us,C,Tp	16.00	3.687	.0305	.0007	.172	.169	2	.1562	.011	.155	2	.0937	.011	.162	N	2.750	.8593	F	.00025	7 11/16	HMS	27.9	13
14	Ford 6-98HA	6—3.30x4.40		Al	O,Tp,Dw,Fh	16.86	4.000	.029	.0020	.178	.173	2	.1862	.013	.150	2	.0932	.013	.150	N	2.912	.8502	F	.00015	8 1/16	SF	28.79	14
15	V8-98BA	8-3 1/16 x3 1/4		Al	O,Tp,Dw,Sh	13.12	2.980	.025	.0020	(m)	.174	2	.1547	.011	.147	2	.0917	.012	.147	N	2.847	.7503	F	.0003	7	HMS	18.70	15
16	Frazer 495-496	6-3 1/16 x4 5/8	Bohn	Al	O,Se,Tp,Ao	15.56	3.562	.023	.0014	.179	.177	2	.1547	.011	.147	2	.0930	.011	.161	N	2.812	.8593	F	.0002	7	1035	29.80	16
17	Hudson 6, 491-492	6-3 1/16 x4 1/8	Own	Al	C	18.00	3.750	.017	.0007	.195	.195	2	(i)	.009	.158	2	.0780	.009	.178	N	2.937	.968	F	.00015	8 1/16	C1041	34.24	17
18	8, 493-494	8-3x4 1/2	Own	Al	C	10.75	3.187	.016	.0007	.148	.148	2	(i)	.006	.135	2	.0930	.006	.128	N	2.437	.750	F	.00015	6 1/16	C1041	31.36	18
19	Kaiser 491-492	6-3 1/16 x4 5/8	Bohn	Al	O,Se,Tp	15.58	3.562	.023	.0014	.179	.177	2	.1547	.012	.147	2	.0930	.012	.161	N	2.812	.8593	F	.0002	7	SF	29.80	19
20	Lincoln 9EL-9EH	8-3 1/16 x4 5/8	Bohn	Al	O,Se,Tp	19.33	3.840	.024	.0007	.188	.178	2	.186	.012	.152	2	.0933	.008	.165	N	3.118	.8503	F	.0005	8 1/16	SF	27.27	20
21	Mercury 9CM	8-3 1/16 x4	Bohn	Al	O,Se,Tp	13.05	2.89	.023	.0007	.159	(n)	2	.186	.014	.142	2	.0933	.016	.154	N	2.847	.7503	F	.0003	7	SF	18.49	21
22	Nash 600-4940	6-3 1/16 x3 1/4	Bohn	Al	St,Se,Tp,C		3.375			.174	(h)	2	.1562	.015	.144	2	.0937	.015	.151	N	2.750	.8594	R	.0003	6 1/16	SF	25.06	22
23	Ambassador-4960	6-3 5/16 x4 5/8	Bohn	Al	Ss,St,Tp,C	12.50	3.875	.021		.177	(p)	2	.1562	.015	.140	2	.0937	.015	(r)	N	2.824	.8746	F	Sel	8 1/4	SF	36.25	23
24	Oldsmobile Futuramic-76	6-3 1/2 x4 5/8	Own	Al	Ts,C,Os	18.24	4.031	.025	.0007	.175	.183	2	.1875	.011	.157	2	.0937	.012	.175	N	3.156	.8550	P	.0001	7 11/16	X1335	30.72	24
25	Futuramic-88	8-3 1/2 x3 1/2	Own	Al	Au,C,Tp,St	19.88	4.00	.034	.0007	.193	.200	1	.1875	.012	.163	2	.0781	.012	.187	N	3.011	.9805	F	.00005	6 1/16	X1335	29.84	25
26	Futuramic-98	8-3 5/16 x3 1/2	Own	Al	Au,C,Tp,St	19.88	4.00	.034	.0007	.193	.200	1	.1875	.012	.163	2	.0781	.012	.187	N	3.011	.9805	F	.00005	6 1/16	X1335	29.54	26
27	Packard 8, 2201-2211	8-3 1/16 x3 3/4		Al	Au	19.50	3.875		.0007			1		.011		3	(s)	.012			3.015	.8750	F	Puf	7 11/16	SF	38.70	27
28	Super 8, 2202-22-32	8-3 1/16 x4 1/4		Al	Au	19.50	3.875		.0007			1		.011		3	(s)	.012			3.015	.8750	F	Puf	7 11/16	SF	35.40	28
29	Custom 8, 2206-26-33	8-3 1/16 x4 5/8		Al	Au	19.50	3.875		.0007			1		.011		3	(s)	.012			3.015	.8750	F	Puf	9 1/16	SF	38.90	29
30	Plymouth P17-18	6-3 1/16 x4 5/8		Al	Us,C,Tp	16.00	3.687	.030	.0007	.172	.169	2	.1562	.011	.155	2	.0937	.011	.162	N	2.750	.8593	F	.00025	7 11/16	HMS	31.06	30
31	Pontiac 6-25	6-3 7/16 x4	Own	CN	Tp	27.00	3.593	.0235	.0015	.194	.192	1	.1875	.009	.158	2	.0937	.009	.175	N	3.062	.9375	P	Puf	7 7/16	1035	36.90	31
32	8-27	8-3 1/16 x3 1/4	Own	CN	Tp	24.84	3.593	.0224	.0015	.189	.189	1	.1875	.011	.150	2	.0937	.011	.150	N	2.875	.9375	P	Puf	7 7/16	1035	31.68	32
33	Studebaker 8G	8-3x4	AC	Lyn	Ts	8.48	2.906	.0165	SeF	.167	(v)	1	.1562	.012	.139	2	(u)	.012	(t)	N	2.625	.750	R	.00015	6 1/16	SF	20.48	33
34	16A	6-3 1/8 x4 5/8	AC	Lyn	Ts	14.40	3.750	.0150	SeF	.186	.171	1	.1875	.011	.150	2	.0937	.011	.155	N	2.875	.8750	R	.00015	6 1/16	SF	33.30	34
35	Willys Jeepster VJ-2	4-3 1/2 x4 5/8	Bohn	CA	Tp	12.50	3.750	.018	.004	.170	.160	1	.1875	.010	.140	2	.0937	.010	.135	N	2.871	.8125	R	.0005	9 1/16	1035	34.00	35
36	4-63	4-3 1/2 x4 5/8	Bohn	Al	Tp	12.50	3.750	.018	.004	.170	.160	1	.1875	.010	.140	2	.0937	.010	.135	N	2.781	.8125	R	.0005	9 1/16	1045	34.00	36
37	6-63	6-3x3 1/2		CA	Tp							1	.1875			2	.0937					.7497	R		6 1/32			37

ABBREVIATIONS

(a)—Upper .1875, lower .1860.
(b)—Upper .015, lower .0015 (segmental).
(c)—Upper .140, lower .155.
(d)—Upper .160, lower .140.
(e)—Upper .150, lower .170.
(f)—Upper .170, lower .150.
(h)—Number one .170, number two .154.
(i)—Upper .1875, lower .156.
(m)—Upper .174, lower .175.
(n)—Number one .169, number two .173.
(p)—Number one .180, number two .157.
(r)—Number one .164, number two .140.
(s)—Number one .0932, number two .1235.
(t)—Top .150, middle .135.
(u)—Top .0937, middle .125.
(v)—Top .163, middle .148.

A-B—Aluminum Company of America and Bohn Aluminum and Brass Company.
AC—Aluminum Company of America.
Al—Aluminum alloy.
Ao—Aluminum, oxide finish.
Au—Auto-thermic.
Bohn—Bohn Aluminum and Brass Corp.
C—Cam ground.
CA—Cast aluminum.
CAl—Cast alloy iron-surface treated.
CN—Chrome-Nickel alloy.
DFS—Drop forged steel.
DW—Double wing.
F—Floating.
Fh—Flat head.
HMS—High manganese forged steel.
Lyn—Lynite.
N—No or None.
O—Oval.
Os—Oxalic sulphuric acid.
P—Locked in piston.
Puf—Push fit.
R—Locked in rod.
Sel—Selective feeler fit.
SF—Steel forging.
Sf—Slanate finish.
Sh—Spherical head.
Sos—Solid skirt.
Se—Slipper skirt.
St—Steel strut.
Tp—Tin plated.
Trs—Transverse slot.
Ts—TT slot.
Tu—Turbulator top.
Us—U slot.
Var—Various.

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CONNECTING RODS AND CRANKSHAFT BEARINGS

Line Number	PASSENGER CAR MAKE AND MODEL	CONNECTING ROD BEARINGS: Crankpin Journal Diameter and Length (In.)	Lower Bearing: Material	Lower Bearing: Average Clearance (In.)	Lower Bearing: Average End Play (In.)	Lower Bearing: Type of Shim	Lower Bearing: Type of Bearing	Lower Bearing: Rods and Pins Removed From	CRANKSHAFT: Vibration Damper	CRANKSHAFT: Counterweights	CRANKSHAFT: End Thrust taken by	CRANKSHAFT: Amount of End Play In.	MAIN BEARINGS: Type	MAIN BEARINGS: Removable from Below	MAIN BEARINGS: Material	MAIN BEARINGS: Clearance In.	MAIN BEARINGS: Type of Shim	MAIN BEARINGS: Journal Diameter and Length: No. 1	No. 2	No. 3	No. 4	No. 5	No. 6	No. 7	No. 8	No. 9	Line Number
1	Buick Special 40	2x1 7/32	Dur	.0011	.007	N	Sep	A	Yes	8	C	.006	Si	Y	Dsb	.0012	No	2 5/16x1 17/64	2 3/8x1 5/16	2 7/16x1 5/8	2 1/2x1 5/16	2 9/16x1 23/32					1
2	Super 50	2x1 7/32	Dur	.0011	.007	N	Sep	A	Yes	8	C	.006	Si	Y	Dsb	.0012	No	2 5/16x1 17/64	2 3/8x1 5/16	2 7/16x1 5/8	2 1/2x1 5/16	2 9/16x1 23/32					2
3	Roadmaster 70	2 1/4x1 7/16	Dur	.0011	.007	N	Sep	A	Yes	8	C	.006	Si	Y	Dsb	.0012	No	2 5/16x1 9/32	2 3/8x1 31/32	2 11/16x1 5/32	2 3/4x1 31/32	2 13/16x2 1/32					3
4	Cadillac 61	2 1/4x2	Dur	.0022	.011‡	N	Sep	A	Yes	6	R	.003	Si	Y	Dur	.0020	No	2 1/2x1	2 1/2x1 1/16	2 1/2x1 1/16	2 1/2x1 1/16	2 1/2x1 7/8					4
5	62	2 1/4x2	Dur	.0022	.011‡	N	Sep	A	Yes	6	R	.003	Si	Y	Dur	.0020	No	2 1/2x1	2 1/2x1 1/16	2 1/2x1 1/16	2 1/2x1 1/16	2 1/2x1 7/8					5
6	60	2 1/4x2	Dur	.0022	.011‡	N	Sep	A	Yes	6	R	.003	Si	Y	Dur	.0020	No	2 1/2x1	2 1/2x1 1/16	2 1/2x1 1/16	2 1/2x1 1/16	2 1/2x1 7/8					6
7	75	2 1/4x2	Dur	.0022	.011‡	N	Sep	A	Yes	6	R	.003	Si	Y	Dur	.0020	No	2 1/2x1	2 1/2x1 1/16	2 1/2x1 1/16	2 1/2x1 1/16	2 1/2x1 7/8					7
8	Chevrolet GJ-GK	2.311x1.437	Bab	.0008	.008	So	Spun	A	Yes	7	3	.006	Si	Y	Bsb	.0015	So	2.684x1.453	2.715x1.437	2.746x1.436	2.778x1.625						8
9	Chrysler C-45	2 1/8x1 7/32	Bsb	.0010	.0145	N	Sep	A	Yes	9	R	.005	Si	Y	Bsb	.0010	No	2 1/2x1 5/16	2 1/2x1 5/16	2 9/16x1 5/16	2 5/8x1 7/8						9
10	C46-47	2 3/16x1 1/8	Bsb	.0010	.0085	N	Sep	A	Yes	8	R	.005	Si	Y	Bsb	.0010	No	2 45/64x1 21/32	2 45/64x1 1/8	2 45/64x1 5/16	2 45/64x1 1/8	2 45/64x2 23/32					10
11	Crosley CD	1.374x.870	Bsb	.0022	.0175	N	Sep	B	No	8	R	.005	Si	Y	Bsb	.0022	No	1.375x1.312‡	1.375x.870‡	1.375x.870‡	1.375x.870‡	1.900x1.469‡					11
12	De Soto S-13	2 1/4x1 7/32	Bsb	.0010	.005	N	Sep	A	Yes	7	R	.005	Si	Y	Bab	.0010	No	2 1/2x1 5/16	2 1/2x1 5/16	2 1/2x1 5/16	2 1/2x1 7/8						12
13	Dodge D29-30	2 1/16x1	Bsb	.0010	.0085	N	Sep	A	Yes	7	R	.005	Si	Y	Bsb	.0010	No	2 1/2x1 15/64	2 1/2x1 1/32	2 1/2x1 1/32	2 1/2x1 7/8						13
14	Ford 6-98HA	2.298x1.400	Bsb	.0015	.005	N	Sep	A	Yes	7	R	.006	Si		SSb			2.873x1.45	2.873x1.45	2.873x1.45	2.873x1.37						14
15	V8-98BA	2.138x1.755	Bsb	.0017	.013	N	Sep	A	No	6	R	.004	Si	Y	SSb	.0013	No	2.499x1.50	2.499x1.50	2.499x2.25							15
16	Frazer 495-496	2.062x1.312	Bsb	.0014	.008	N	Sep	A	Yes	6	F	.005	Si	Y	Beb	.0017	No	2.375x1.562	2.375x1.312	2.375x1.312	2.375x1.546						16
17	Hudson 6, 491-492	2.125x1.825	Bsb	.0010	.010	N	Sep	A	Yes	7	3	.006	Si	Y	Bsb	.0010	No	2.499x1.437	2.499x1.375	2.499x1.625	2.499x1.750						17
18	8, 493-494	1.937x1.375	(c)	.0004	.010	N	Spun	A	Yes	8	4	.009	Si	Y	Bbt	.001	No	2.281x1.625	2.312x1.375	2.343x1.875	2.375x1.375	2.406x2.00					18
19	Kaiser 491-492	2.062x1.312	Bsb	.0014	.008	N	Sep	A	Yes	6	F	.005	Si	Y	Bsh	.0017	No	2.375x1.562	2.375x1.312	2.375x1.312	2.375x1.546						19
20	Lincoln 9EL-9EH	2.400x2.252	SSb	.0014	.010‡	N	Sep	A	Yes	6	R	.006	Si	Y	SSb	(d)	No	2.874x1.35	2.874x1.48	2.874x2.40							20
21	Mercury 9CM	2.138x1.755	SSb	.0017	.013‡	N	Sep	A	No	6	R	.004	Si	Y	SSb	.0012	No	2.499x1.50	2.499x1.50	2.499x2.25							21
22	Nash 600-4940	2.094x1.125	Bsb	.0015	.010	N	Sep	A	Yes	5	F	.005	Si	Y	Bsb	.002	No	2.484x1.312	2.484x1.375	2.484x1.375	2.484x1.687						22
23	Ambassador 4960	2.005x1.437	Bsb	.0015	.011	N	Sep	A	Yes	7	4	.005	Si	Y	Bsb	.0018	No	2.484x1.500	2.484x1.125	2.484x1.125	2.484x1.875	2.484x1.125	2.484x1.125	2.484x1.875			23
24	Oldsmobile Futuramic 76	2.353x1.125	Dsb	.0010	.008	N	Sep	A	Yes	7	F	.006	Si	Y	Dsb	(b)	No	2.478x1.472	2.541x1.250	2.666x1.250	2.666x1.500						24
25	Futuramic 88	2.250x2.000	Dsb	.0010	.006	N	Sep	A	Yes	6	R	.006	Si	Y	Dsb	.0017	No	2.500x1.093	2.500x1.125	2.500x1.125	2.500x1.125	2.625x1.880					25
26	Futuramic 98	2.250x2.000	Dsb	.0010	.006	N	Sep	A	Yes	6	R	.006	Si	Y	Dsb	.0017	No	2.500x1.093	2.500x1.125	2.500x1.125	2.500x1.125	2.625x1.880					26
27	Packard 8, 2201-2211	2 1/4x1 5/16	SCc	.0015	.007	N	Sep	A	Yes	8	C	.005	Si	Y	SCc	.0015	No	2.746x1.218	2.746x1.062	2.746x1.593	2.746x1.062	2.746x2.062					27
28	Super 8, 2202-22-32	2 1/4x1 5/16	SCc	.0015	.007	N	Sep	A	Yes	8	C	.005	Si	Y	SCc	.0015	No	2.746x1.218	2.746x1.062	2.746x1.593	2.746x1.062	2.746x2.062					28
29	Cust. 8, 2206-26-33	2 1/4x1 3/4	SCc	.0015	.008	N	Sep	A	Yes	8	C	.005	Si	Y	SCc	.0015	No	2.746x1.343	2.746x1.187	2.746x1.187	2.746x1.187	2.746x1.687					29
30	Plymouth P17-18	2 1/16x1	Bsb	.0010	.005	N	Sep	A	Yes	7	R	.005	Si	Y	Beb	.0010	No	2 1/2x1 15/64	2 1/2x1 1/32	2 1/2x1 1/32	2 1/2x1 7/8						30
31	Pontiac 6-25	2 1/4x1 9/32	SSb	.0011	.0095	N	Sep	A	Yes	9	3	.005	Si	Y	SSb	.0013		2 1/2x1 1/4	2 17/32x1 1/16	2 15/32x1 7/8	2 5/8x1 9/16						31
32	8-27	2x1 1/16	SSb	.0011	.0095	N	Sep	A	Yes	8	4	.005	Si	Y	SSb	.0013	No	2 3/8x1 7/16	2 13/32x1 3/8	2 7/16x1 5/8	2 15/32x1 3/8	2 1/2x2 1/8					32
33	Studebaker 8G	1 13/16x1 1/8	Bsb	.0012	.007	N	Sep	A	Yes	4	F	.004	Si	Y	Bsb	.0015	No	2 7/16x1 5/16	2 7/16x1 1/8	2 7/16x1 1/8	2 7/16x1 17/32						33
34	16A	2 1/16x1 3/8	Bsb	.0012	.007	N	Sep	A	Yes	5	F	.004	Si	Y	Bsb	.0015	No	2 1/2x1 5/16	2 1/2x1 1/8	2 1/2x1 1/8	2 1/2x1 27/32						34
35	Willys Jeepster VJ-2	1 15/16x1 5/16	Bsb	.0015	.007	N	Sep	A	No	4	F	.005	Si	N	Bsh	.0013	No	2.33x1.92	2.33x1.81	2.33x1.750							35
36	4-63	1 15/16x1 5/16	Bsb	.0015	.007	N	Sep	A	No	4	F	.005	Si	N	Bsh	.0013	No	2.334x1.924	2.334x1.812	2.334x1.750							36
37	6-63	1.875x.899	Bsb									.005						2.250x1.301	2.250x1.062	2.250x1.062	2.250x1.405						37

ABBREVIATIONS

‡—Total for 2 rods.
†—Bearing insert.
(b)—Rear .0095 to .002; Others .001 to .003.
(c)—S.A.E. 13 or equivalent.
(d)—Clearance .001-.003, except rear .0004-.0029.
A—Above.
B—Below.
Bab—Babbitt.
Bbt—Bronze back, lined with Tin Base (Bermax optional).
Bsb—Babbitt—steel backed.
C—Center.
Dsb—Durex—Steel Backed.
Dur—Durex.
F—Front.
N—No or None.
R—Rear.
SCc—Special composition construction.
Sep—Separate.
Si—Slip-in.
So—Solid.
SSb—Special Alloy—Steel Backed.
Y—Yes.

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1949 PASSENGER CARS

VALVES, INTAKE AND EXHAUST

Line Numbers	PASSENGER CAR MAKE AND MODEL	INTAKE VALVE									Springs					EXHAUST VALVE									Springs					Line Numbers
		Make	Material	Overall Length (In.)	Head Diameter (In.)	Port Diameter (In.) Minimum	Seat Angle (Deg.)	Seat Inserts Used?	Stem Diameter (In.)	Lift (In.)	Pressure (Lb.) Valve Closed	Pressure (Lb.) Valve Open	Length (In.) Valve Closed	Length (In.) Valve Open	Length (In.) Out of Engine	Make	Material	Overall Length (In.)	Head Diameter (In.)	Port Diameter (In.) Minimum	Seat Angle (Deg.)	Seat Inserts Used?	Stem Diameter (In.)	Lift (In.)	Pressure (Lb.) Valve Closed	Pressure (Lb.) Valve Open	Length (In.) Valve Closed	Length (In.) Valve Open	Length (In.) Out of Engine	
1	Buick — Special 40	T-R	3140	5.109	1.531	1.125	45	No	.372	.348	32†	77†	1.937†	1.593†	2.343†	TER	2112	5.109	1.343	1.031	45	No	.371	.342	32†	77†	1.937†	1.593†	2.343†	1
2	Super 50	T-R	3140	5.109	1.531	1.125	45	No	.372	.348	32†	77†	1.937†	1.593†	2.343†	TER	2112	5.109	1.343	1.031	45	No	.371	.342	32†	77†	1.937†	1.593†	2.343†	2
3	Roadmaster 70	T-R	3140	5.250	1.781	1.375	45	No	.372	.347	32†	77†	1.937†	1.593†	2.343†	Thos	X-B	5.250	1.437	1.062	45	No	.371	.348	32†	77†	1.937†	1.593†	2.343†	3
4	Cadillac — 61	Rich	3140	4.549	1.750	1.625	44	No	.343	.330	60	135	1.696	1.366	1.968	Rich	(a)	4.549	1.437	1.312	44	No	.343	.330	60	135	1.696	1.366	1.968	4
5	62	Rich	3140	4.549	1.750	1.625	44	No	.343	.330	60	135	1.696	1.366	1.968	Rich	(a)	4.549	1.437	1.312	44	No	.343	.330	60	135	1.696	1.366	1.968	5
6	60	Rich	3140	4.549	1.750	1.625	44	No	.343	.330	60	135	1.696	1.366	1.968	Rich	(a)	4.549	1.437	1.312	44	No	.343	.330	60	135	1.696	1.366	1.968	6
7	75	Rich	3140	4.549	1.750	1.625	44	No	.343	.330	60	135	1.696	1.366	1.968	Rich	(a)	4.549	1.437	1.312	44	No	.343	.330	60	135	1.696	1.366	1.968	7
8	Chevrolet — GJ-GK	Own	ES	6.275	1.640	1.250	30	No	.341	.294	58	132	1.821	1.505	2.125	Own	ES	4.854	1.468	1.203	30	No	.340	.311	58	132	1.821	1.505	2.125	8
9	Chrysler — C-45		Steel	4.781	1.718	1.437	45	No	.341	.375	45	111	1.750	1.375	2.000		Sil	4.781	1.531	1.375	45	Yes	.339	.375	45	111	1.750	1.375	2.000	9
10	C46-47		Steel	5.875	1.531	1.406	45	No	.341	.375	45	111	1.750	1.375	2.000		Sil	5.875	1.343	1.218	45	Yes	.340	.375	45	111	1.750	1.375	2.000	10
11	Crosley — CD	Own	3140	3.934	1.171	1.050	45	No	.313	.225	7½*	9*	1.716*	1.437*	2.750*	Own	21-12N	3.934	1.046	.925	45	No	.312	.225	30	51	1.500	1.218	2.000	11
12	De Soto — S-13		Steel	4.781	1.718	1.437	45	No	.341	.375	45	111	1.750	1.375	2.000		Sil	4.781	1.531	1.375	45	Yes	.340	.375	45	111	1.750	1.375	2.000	12
13	Dodge — D29-30		Steel	4.781	1.531	1.250	45	No	.341	.359	45	111	1.750	1.375	2.000		Sil	4.781	1.406	1.281	45	Yes	.340	.359	45	111	1.750	1.375	2.000	13
14	Ford — 6-98HA	Var	(c)	5.427	1.652	1.511	45	No	.341	.350	50	116	2.13	1.75	2.50	Var	CNS	5.427	1.515	1.340	45	Yes	.341	.350	50	116	2.13	1.75	2.50	14
15	V8-98BA	Var	(c)	4.819	1.515	1.340	45	Yes	.341	.296	38½	80	2.13	1.81	2.41	Own	CNS	4.819	1.515	1.340	45	Yes	.341	.292	38½	80	2.13	1.81	2.41	15
16	Frazer — 495-496		NS	5.187	1.515	1.375	30	No	.341	.348	51	113	1.671	1.312	1.937		(c)	5.187	1.328	1.187	45	No	.339	.331	51	113	1.671	1.312	1.937	16
17	Hudson — 6, 491-492	WR	8645	5.730	1.831	1.687	45	No	.341	.346	77	159	2.188	1.842	2.500	WR	;	5.730	1.556	1.375	45	No	.340	.346	77	159	2.188	1.842	2.500	17
18	8, 493-494	WR	8645	5.094	1.500	1.380	45	No	.341	.343	40	80			2.343	WR	(c)	5.094	1.375	1.223	45	No	.339	.343	40	80			2.343	18
19	Kaiser — 491-492		NS	5.187	1.515	1.375	30	No	.341	.348	51	113	1.671	1.312	1.937		(c)	5.187	1.328	1.187	45	No	.339	.331	51	113	1.671	1.312	1.937	19
20	Lincoln — 9EL-9EH	WR	(c)	5.714	1.800	1.570	45	No	.341	.357	65	146	1.680	1.320	2.080	WR	CNS	5.714	1.515	1.350	45	Yes	.341	.340	65	146	1.680	1.320	2.080	20
21	Mercury — 9CM	WR	(c)	4.817	1.515	1.340	45	Yes	.341	.338	38	78	2.130	1.840	2.410	WR	CNS	4.814	1.515	1.340	45	Yes	.341	.338	38	78	2.13	1.84	2.41	21
22	Nash — 600-4940	AI-R	Steel	4.781	1.468	1.312	(d)	No	.341	.312	39	83	1.750	1.437	2.093	AI-R	2112	4.781	1.281	1.125	(d)	No	.341	.312	39	83	1.750	1.437	2.093	22
23	Ambassador 4960	AI-R	Steel	5.531	1.750	1.593	(d)	No	.372	.343	53	146	1.687	1.343	2.093	AI-R	2112	5.531	1.468	1.312	(d)	No	.372	.343	53	146	1.687	1.343	2.093	23
24	Oldsmobile — Futuramic 76	Var	3140	5.789	1.750	1.375	30	No	.342	.310	55	100	2.25	1.937	2.625	Var	AS	5.796	1.421	1.250	45	No	.341	.308	55	100	2.50	1.937	2.625	24
25	Futuramic 88	Var	3140	4.855	1.750	1.437	45	No	.342	.222	65	140	1.777	1.447	2.093	Var	AS	4.843	1.469	1.250	45	No	.393	.222	65	140	1.777	1.447	2.093	25
26	Futuramic 98	Var	3140	4.855	1.750	1.437	45	No	.342	.222	65	140	1.777	1.447	2.093	Var	AS	4.843	1.469	1.250	45	No	.393	.222	65	140	1.777	1.447	2.093	26
27	Packard — 8, 2201-2211		CNS	5.875	1.671		30		.341	.342	63	140	1.750	1.406			Aus	5.875	1.437		45		.339	.342	63	140	1.750	1.406		27
28	Super 8, 2202-22-32		CNS	5.875	1.671		30		.341	.342	63	140	1.750	1.406			Aus	5.875	1.437		45		.339	.342	63	140	1.750	1.406		28
29	Cust. 8, 2206-26-33		CNS	6.218	1.671		30		.341	.342	63	140	1.750	1.406			Aus	5.875	1.437		45		.339	.342	63	140	1.750	1.406		29
30	Plymouth — P17-18		Steel	4.781	1.531	1.250	45	No	.341	.375	45	111	1.750	1.375	2.000		Sil	4.781	1.406	1.281	45	Yes	.341	.375	45	111	1.750	1.375	2.000	30
31	Pontiac — 6-25	Opt	Opt	5.718	1.593	1.375	30	No	.312	.296	59½	101	1.906	1.593		Opt	Opt	5.718	1.468	1.312	45	No	.312	.296	59½	101	1.906	1.593		31
32	8-27	Opt	Opt	5.531	1.468	1.250	30	No	.312	.296	59½	101	1.906	1.593		Opt	Opt	5.531	1.343	1.187	45	No	.312	.296	59½	101	1.906	1.593		32
33	Studebaker — 8G	Rich	CNS	4.343	1.343	1.187	45	No	.312	.312	39	81	1.656	1.437	2.093	Rich	2112	4.343	1.281	1.125	45	No	.312	.312	39	81	1.656	1.437	2.093	33
34	16A	Rich	CNS	5.218	1.468	1.312	45	No	.343	.343	57	130	2.093	1.750	2.500	Rich	Sil	5.218	1.281	1.125	45	No	.343	.343	57	130	2.093	1.750	2.500	34
35	Willys — Jeepster CJ-2A	AI-R	3140	5.750	1.531		45	No	.373	.351	50	116	2.109	1.750	2.500	AI-R	3140	5.750	1.468		45	No	.372	.351	50	116	2.109	1.750	2.500	35
36	4-63	AI-R	3140	5.750	1.531		45	No	.373	.351	50	116	2.108	1.750	2.500	AI-R	3140	5.750	1.468		45	No	.372	.351	50	116	2.108	1.750	2.500	36
37	6-63				1.375		45		.341	.290									1.281		45		.340	.308						37

ABBREVIATIONS

†—Outer Valve Spring Only.
Inner: 20 lb.; 1.656 in. valve closed. 51 lb.; 1.312 in. valve open. 1.906 in. out of engine.

;—Lower—NE8645 Steel—Upper Austenitic 2112 Steel.

*—Intake valve outer spring only, inner same as on exhaust valve.

(a)—Head NS2120—Stem S729

(c)—Silchrome steel.

(d)—45° in Block—40° Valve Face.

AS—Alloy Steel.

AI-R—Alum. Industries or Rich Mfg.

Aus—Austenitic Steel.

CNS—Chrome—Nickel Steel.

ES—Extruded Steel.

NS—Nickel Steel.

Opt—Optional.

Sil—Silchrome.

TE-R—Thomas Eaton or Rich.

Thos—Thomas.

T-R—Thompson or Wilcox-Rich Div.

Var—Various.

WR—Wilcox-Rich Div.

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TIMING GEARS, VALVE TIMING AND LUBRICATION

Line Number	PASSENGER CAR MAKE AND MODEL	CRANKSHAFT GEAR OR SPROCKET: Make	CRANKSHAFT GEAR OR SPROCKET: Material	CAMSHAFT GEAR OR SPROCKET: Make	CAMSHAFT GEAR OR SPROCKET: Material	TIMING CHAIN: Make	TIMING CHAIN: Number of Links	TIMING CHAIN: Width (In.)	TIMING CHAIN: Pitch (In.)	VALVE TAPPET CLEARANCE (Inches): Intake: Operating	VALVE TAPPET CLEARANCE (Inches): Intake: Timing	VALVE TAPPET CLEARANCE (Inches): Exhaust: Operating	VALVE TAPPET CLEARANCE (Inches): Exhaust: Timing	Hydraulic Valve Lifters	VALVE TIMING (Degrees): Intake: Opens	VALVE TIMING (Degrees): Intake: Closes	VALVE TIMING (Degrees): Exhaust: Opens	VALVE TIMING (Degrees): Exhaust: Closes	LUBRICATION: Type	LUBRICATION: Oil Pressure to: Main Bearings	LUBRICATION: Oil Pressure to: Connecting Rods	LUBRICATION: Oil Pressure to: Wristpins	LUBRICATION: Oil Pressure to: Camshaft Bearings	LUBRICATION: Oil Pressure to: Tappets	LUBRICATION: Oil Pressure to: Timing Gear or Chain	LUBRICATION: Pump Type	LUBRICATION: Normal Oil Pressure Lbs. at M.P.H.	LUBRICATION: Lbs. Pressure which Opens Relief Valve	LUBRICATION: Crankcase Capacity Dry (Qts.) Less Filter	LUBRICATION: Oil Pressure Gage Make	LUBRICATION: Floating Type Oil Intake	LUBRICATION: External Oil Filter Make	LUBRICATION: Oil Cooler Make	Line Number
1	Buick — Special 40	LB	1112	LB	CI	LB	49	1	1/2	.015H	.015	.015H	.015	N	13BT	68AB	55BB	22AT	P	Y	Y	N	Y	N	Pv	Ge	35-35	35	6½	AC	Yes	No	No	1
2	Super 50	LB	1112	LB	CI	LB	49	1	1/2	.015H	.015	.015H	.015	N	13BT	68AB	55BB	22AT	P	Y	Y	N	Y	N	Pv	Ge	35-35	35	6½	AC	Yes	No	No	2
3	Roadmaster 70	LB	1112	LB	CI	LB	56	1	1/2	Ha	Ha	Ha	Ha	Y	14BT	71AB	90BB	28AT	P	Y	Y	N	Y	N	Pv	Ge	35-35	35	8	AC	Yes	AC	No	3
4	Cadillac — 61	Own	1115	Own	1115	LB	46	11/16	1/2	Ha	.001	Ha	.001	Y	19BT	83AB	53BB	49AT	P	Y	Y	N	Y	Y	Sp	Ge	35-30	40	5	AC	Yes	No	No	4
5	62	Own	1115	Own	1115	LB	46	11/16	1/2	Ha	.001	Ha	.001	Y	19BT	83AB	53BB	49AT	P	Y	Y	N	Y	Y	Sp	Ge	35-30	40	5	AC	Yes	No	No	5
6	60	Own	1115	Own	1115	LB	46	11/16	1/2	Ha	.001	Ha	.001	Y	19BT	83AB	53BB	49AT	P	Y	Y	N	Y	Y	Sp	Ge	35-30	40	5	AC	Yes	No	No	6
7	75	Own	1115	Own	1115	LB	46	11/16	1/2	Ha	.001	Ha	.001	Y	19BT	83AB	53BB	49AT	P	Y	Y	N	Y	Y	Sp	Ge	35-30	40	5	AC	Yes	No	No	7
8	Chevrolet — GJ-GK	Own	Steel	Var	BF	Timing		Gear		.008H	.006H	.013H	.013H	N	1BT	39AB	42BB	9AT	FS	Y	Y	N	Y	N	Pv	Ge	14-38	60	5½	AC	Yes	No	No	8
9	Chrysler — C-45		HMS		CI		48	1	1/2	.008H	.014	.010H	.014	N	12BT	44AB	50BB	6AT	P	Y	Y	N	Y	N	Pv	Rot	45-40	45			Yes				9
10	C46-47		HMS		CI		47	11/4	1/2	.008H	.011	.010H	.014	N	12BT	44AB	50BB	6AT	P	Y	Y	N	Y	N	Pv	Rot	45-60	45			Yes	Pur			10
11	Crosley — CD	Own	1040	Own	1045	Timing		Gear		.005C		.007C		N	5BT	50AB	321/2BB	5AT	P	Y	Y	N	Y	N	Pv	Ge	42-30	35	2.8	SW	No	Fram	No	11
12	De Soto — S-13		HMS		CI		48	1	1/2	.008H	.014C	.010H	.014C	N	12BT	44AB	50BB	6AT	P	Y	Y	N	Y	N	Pv	Rot	45-60	45			Yes	Pur			12
13	Dodge — D29-30		HMS		CI		48	1	1/2	.008H	.014C	.010H	.014C	N	8BT	36AB	37BB	7AT	P	Y	Y	N	Y	N	Pv	Rot	45-20	45			Yes	Pur	No	13
14	Ford — 6-98HA	Own	CI	Own	AI	Timing		Gear		.010C	.015	.014C	.015	N	11BT	41AB	48BB	10AT	P	Y	Y	N	Y	N	P	Rot	57-60		5*	Var	No	Var	No	14
15	V8-98BA	Own	CI	Own	AI	Timing		Gear		.011	.015	.015	.015	N	0BT	44AB	48BB	6AT		Y	Y	N	Y	N	P	Ge	57-	42	5*	Var	No	Var	No	15
16	Frazer — 495-496	LB	Steel		CI	LB	46	1	1/2	.014C	.014	.014C	.014	N	10BT	60AB	55BB	10AT	P	Y	Y	N	Y	N†	Pv	Ge	35-30	35	5½	AL	Yes	Pur			16
17	Hudson — 6, 491-492	Mor	Steel	Mor	CI	Mor	60	11/4	3/8	.010H		.012H		N	7°18'BT	53°42'AB	53°18'BB	7°42'AT	P	Y	Y	N	Y	N	Pv	Rot	40-30		7½		Yes	Mic	No	17
18	8, 493-494	Own	CI	Alcoa	AI					.006H		.008H		N	10°40'BT	60°AB	30°BB	18°44'AT	(a)	N	N	N	N	N	Sp	OP	3-	3	8		Yes	Mic	No	18
19	Kaiser — 491-492		Steel	Own	CI	LB	46	1	1/2	.014H	.014	.014H	.014	N	10BT	60AB	55BB	10AT	P	Y	Y	N	Y	Y†	Pv	Ge	35-30	35	5½	AL	Yes	Pur			19
20	Lincoln — 9EL-9EH	Own	CI	Own	AI	Timing		Gear		Ha		Ha		Y	14BT	60AB	62BB	16AT	P	Y	Y	N	Y	Y	Pv	Ge	50-40	50	6	Own	No	Fram			20
21	Mercury — 9CM	Own	CI	Own	CI	Timing		Gear		.011	.015	.015	.015	N	10BT	50AB	50BB	10AT	P	Y	Y	N	Y	N	Sp	Ge	57-40		6	Own	No	Fram	No	21
22	Nash — 600-4540	Own	C1117	Own	CI	Mor	60	1	3/8	.015H	.019	.015H	.019	N	6BT	50AB	46BB	10AT	P	Y	Y	N	Y	N	Pv	Ge	50-30		5	AL	No	Pur*	No	22
23	Ambassador 4960	Own	Steel	Own	CI	Mor	60	1	3/8	.015	.0225	.018	.0225	N	4°32'BT	61°26'AB	49°26'BB	16°32'AT	P	Y	Y	Y	Y	N	Pv	Ge	50-30		6	KS	No	Pur	No	23
24	Oldemobile — Futuramic 76	LB	X1315	LB	CI	LB	47	15/16	1/2	.008H	.0125	.011H	.0155	N	5BT	45AB	45BB	5AT	P	Y	Y	Y	Y	N	Pv	Ge	40-30	40	5	AC	No	No	No	24
25	Futuramic 88	LB	1141	LB	CI	LB	48	27/32	1/2	Ha	Ha	Ha	Ha	Y	14BT	50AB	50BB	14AT	P	Y	Y	Y	Y	Y	Pv	Ge	40-30	40	5	AC	No	No	No	25
26	Futuramic 98	LB	1141	LB	CI	LB	48	27/32	1/2	Ha	Ha	Ha	Ha	Y	14BT	50AB	50BB	14AT	P	Y	Y	Y	Y	Y	Pv	Ge	40-30	40	5	AC	No	No	No	26
27	Packard — 8, 2201-2211		Steel		CI	MR	58	11/4	3/8	.007	.0125	.010	.015	N	10BT	50AB	50BB	5AT	P	Y	Y	Y	Y	Y	Pv	Ge	40		6		Yes				27
28	Super 8, 2202-22-32		Steel		CI	MR	58	11/4	23/64	.007	.0125	.010	.015	N	10BT	50AB	50BB	5AT	P	Y	Y	Y	Y	Y	Pv	Ge	40		6		Yes				28
29	Cust. 8, 2206-26-33		Steel		CI	Mor	62	11/4	23/64	Ha	Ha	Ha	Ha	Y	4BT	51AB	49BB	10AT	P	Y	Y	Y	Y	Y	Pv	Ge	50		7		Yes				29
30	Plymouth — P17-18		HMS		CI		48	1	21/32*	.008H	.014C	.010H	.014C	N	12BT	44AB	50BB	6AT	P	Y	Y	N	Y	N	Pv	Rot	45-20	45			Yes	Pur	No	30
31	Pontiac — 6-25	Own	Steel	Own	IRC	M	56	1	3/8	.012H	.012	.012H	.012	N	5BT	39AB	45BB	5AT	P	Y	Y	Y	Y	N	Pv	Ge	35-40	38	5	AC	No	No	No	31
32	8-27	Own	Steel	Own	IRC	M	56	3/4		.012H	.012	.012H	.012	N	5BT	39AB	45BB	5AT	P	Y	Y	Y	Y	N	Pv	Ge	35-40	38	5	AC	No	No	No	32
33	Studebaker — 8G	Own	CI	CD	Cel	Timing		Gear		.016C	.020	.016C	.020	N	15BT	49AB	54BB	10AT	P	Y	Y	N	Y	Y	Pv	Ge	40-30	40	5	SW	Yes	No	No	33
34	16A	Own	CI	CD	Cel	Timing		Gear		.016C	.020	.016C	.020	N	15BT	49AB	54BB	10AT	P	Y	Y	N	Y	Y	Pv	Ge	40-30	40	6	SW	Yes	Fram	No	34
35	Willys — Jeepster VJ-2	Cly	CI	CFW	Fah	Timing		Gear		.014	.020	.014		N	9BT	50AB	47BB	12AT	P	Y	Y	N	Y	N	Pv	Ge	35-30	40	4	KS	Yes	Pur	No	35
36	4-63	Cly	CI	CFW	Fah	Timing		Gear		.014	.020	.014		N	9BT	50AB	47BB	12AT	P	Y	Y	N	Y	N	Pv	Ge	35-30	40	4	KS	Yes	Pur	No	36
37	6-63	Cly	CI	CFW	Fah	Timing		Gear		.014	.020	.014		N	9BT	50AB	47BB	12AT	P	Y	Y	N	Y	N	Pv	Ge	35-30	40	4	KS	Yes	Pur	No	37

ABBREVIATIONS

*—At extra cost.
•—Includes oil filter.
†—Exhaust only.
(a)—Duo-lo, splash.
AB—After Bottom Center
AC—AC Spark Plug Div.
Al—Aluminum.
AT—After top center.
Aul—Auto-Lite.
BB—Before bottom center.
BF—Bakelite and Fabric Composition
BT—Before top center.
C—Cold.
CD—Continental Diamond Fiber Co.
Cel—Celeron with Steel hub.
CFW—Continental Diamond Fibre and Westinghouse.
CI—Cast iron.
Cly—Cloyes Gear Works.
Fm—Fram Corp.
Fah—Fibre-steel hub.
Ge—Gear.
H—Hot.
Ha—Hydraulic Automatic Adjustment
HMS—High Manganese Steel.
IRC—Iron Alloy Cyanide Hardened.
KS—King-Seeley Corp.
LB—Link-Belt Co.
Mic—Michiana.
Mor—Morse Chain Co.
MR—Morse Chain or Ramsey Chain Co.
N—No or None.
OP—Oscillating Plunger.
P—Pressure.
PS—Pressure Stream and Splash.
Pur—Purolator Prod. Inc.
Pv—Positive.
Rot—Rotor.
Sem—Semi-Steel.
Sp—Splash.
SW—Steward-Warner Corp.
TC—Top Center.
Var—Various.
Y—Yes.

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1949 PASSENGER CARS

FUEL AND COOLING SYSTEMS

Line Number	PASSENGER CAR MAKE AND MODEL	FUEL SYSTEM: Tank Capacity (Gal.)	Feed: Type	Feed: Make	Carburetor: Make	Carburetor: Model No.	Carburetor: Size (In.)	Carburetor: Type	Manifold Heat Control	Automatic Choke—Make	Air Cleaner—Make	Muffler—Make	COOLING SYSTEM: Water Pump: Type	Water Pump: Drive	Water Pump: Packing Nut	Thermostat—Make	Pressure Relief Valve	By-pass for Recirculation	Radiator Core: Type	Radiator Core: Make	Capacity of System (Qts.)	Full Length Water Jackets	Water All Around Cylinder	Lower Hose: Inside Diameter (In.)	Lower Hose: Length (In.)	Upper Hose: Inside Diameter (In.)	Upper Hose: Length (In.)	FAN BELT: Make	FAN BELT: Angle of Vee (Deg.)	FAN BELT: Length Outside (In.)	FAN BELT: Width Max. (In.)	FAN BELT: Fan Make	Line Number
1	Buick Special 40	19	CP	AC	S-C	(a)	1	DD	Aut	S-C	AC	W-H	Ce	VB	No	[a]	Yes	Yes	VC	Har	13	No	Yes	$1^{9}/_{16}$	ET	$1^{9}/_{16}$	ET	Var	.....	.....	$^{3}/_{4}$	Hay	1
2	" Super 50	19	CP	AC	S-C	(a)	1	DD	Aut	S-C	AC	W-H	Ce	VB	No	Har	Yes	Yes	VC	Har	13	No	Yes	$1^{9}/_{16}$	ET	$1^{9}/_{16}$	ET	Var	.....	.....	$^{3}/_{4}$	Hay	2
3	" Roadmaster 70	19	CP	AC	S-C	(b)	$1^{1}/_{4}$	DD	Aut	S-C	AC	W-H	Ce	VB	No	Har	Yes	Yes	TF	Har	$16^{3}/_{4}$	No	Yes	$1^{9}/_{16}$	ET	$1^{9}/_{16}$	ET	Var	.....	.....	1	Hay	3
4	Cadillac 61	20	CP	AC	Car	(c)	$1^{1}/_{4}$	DD	Aut	Car	AC	W-M	Ce	VB	No	F-D	Yes	Yes[n]	TF	Har	18	Yes	Yes	$1^{3}/_{4}$	$8^{7}/_{16}$	$1^{3}/_{4}$	$8^{7}/_{16}$	GG	40	57	.380	Hay	4
5	" 62	20	CP	AC	Car	(c)	$1^{1}/_{4}$	DD	Aut	Car	AC	W-M	Ce	VB	No	F-D	Yes	Yes	TF	Har	18	Yes	Yes	$1^{3}/_{4}$	$8^{7}/_{16}$	$1^{3}/_{4}$	$8^{7}/_{16}$	GG	40	57	.380	Hay	5
6	" 60	20	CP	AC	Car	(c)	$1^{1}/_{4}$	DD	Aut	Car	AC	W-M	Ce	VB	No	F-D	Yes	Yes	TF	Har	18	Yes	Yes	$1^{3}/_{4}$	$8^{7}/_{16}$	$1^{3}/_{4}$	$8^{7}/_{16}$	GG	40	57	.380	Hay	6
7	" 75	20	CP	AC	Car	(c)	$1^{1}/_{4}$	DD	Aut	Car	AC	W-M	Ce	VB	No	F-D	Yes	Yes	TF	Har	18	Yes	Yes	$1^{3}/_{4}$	$8^{7}/_{16}$	$1^{3}/_{4}$	$8^{7}/_{16}$	GG	40	57	.380	Hay	7
8	Chevrolet GJ-GK	16	CP	AC	Car	WI-684S	$1^{1}/_{4}$	SD	Aut	No	AC	Var	Ce	VB	No	Har	No	No[o]	Cel	Har	16	Yes	Yes	$1^{1}/_{2}$	$3^{1}/_{8}$*	$1^{1}/_{4}$	$6^{3}/_{4}$	Var	32	$42^{7}/_{8}$	.687	Own	8
9	Chrysler C-45	17	CP	.....	Car	.....	$1^{1}/_{2}$	SD	Aut	Sis	.....	.....	Ce	VB	No	.....	No	Yes	Cel	.....	17	Yes	No	$1^{1}/_{2}$	(d)	$1^{3}/_{4}$	Cur	.....	38-42	$48^{1}/_{16}$	.750	.....	9
10	" C46-47	20	CP	.....	Car	.....	$1^{1}/_{2}$	SD	Aut	.....	.....	.....	Ce	VB	No	.....	No	Yes	TF	.....	21	Yes	No	$1^{3}/_{4}$	(e)	$1^{3}/_{4}$	Cur	.....	38-42	$48^{1}/_{16}$	.750	.....	10
11	Crosley CD	$6^{1}/_{2}$	CP	AC	Til	Dy-9C	$^{7}/_{8}$	SD	No	No	US	Own	.....	VB	Yes	Ful	No	No	TF	Yng	4	No	.....	$1^{1}/_{16}$	$16^{1}/_{2}$	$1^{1}/_{16}$*	$11^{3}/_{8}$	Ga	34	34	.719	Own	11
12	De Soto S-13	17	CP	.....	Car	.....	$1^{1}/_{2}$	SD	Aut	Sis	.....	.....	Ce	VB	No	.....	No	Yes	Cel	.....	17	Yes	No	$1^{1}/_{2}$	(d)	$1^{3}/_{4}$	Cur	.....	38-42	$48^{1}/_{16}$	.750	.....	12
13	Dodge D29-30	17	CP	.....	Str	.....	$1^{1}/_{2}$	SD	Aut	Sis	.....	.....	Ce	VB	No	.....	No	Yes	Cel	.....	15	Yes	No	$1^{1}/_{2}$	(d)	$1^{3}/_{4}$	Cur	.....	38-42	$49^{11}/_{16}$	.750	.....	13
14	Ford 9-98HA	17	CP	.....	.....	.....	(m)	SD	Aut	No	.....	Var	Ce	VB	No	.....	Yes	Yes	TF	Own	17.3	Yes	Yes	$1^{1}/_{2}$	15	$1^{1}/_{2}$	$9^{1}/_{2}$	.....	40	$41^{1}/_{2}$	.380	.....	14
15	" V8-98BA	17	CP	.....	Own	AA-1	(n)	DD	Aut	No	.....	Var	Ce	VB	No	.....	Yes	Yes	TF	Own	22	Yes	Yes	$1^{3}/_{4}$	$5^{1}/_{2}$	$1^{1}/_{4}$	$14^{1}/_{2}$	.....	33	54.66	.380	.....	15
16	Frazer 495-496	21	CP	AC	Car	WED	$1^{1}/_{4}$	DD	Aut	Car	AC	Hay	Ce	VB	No	Har	Yes	No	Cel	Fed	13.5	Yes	Yes	$1^{1}/_{2}$	6	$1^{1}/_{2}$	$7^{1}/_{2}$	Gy	45	$43^{1}/_{4}$	$^{3}/_{8}$	Hay	16
17	Hudson 6, 491-492	20	CP	AC	Car	WDO-647S	$1^{1}/_{4}$	DD	Aut	Car	AC	Old	Ce	VB	No	Ful	No	Yes	TF	McC	18	Yes	Yes	$1^{3}/_{4}$	4	$1^{1}/_{2}$	$12^{7}/_{8}$	Var	46-48	$41^{1}/_{2}$	.790	Hay	17
18	" 8, 493-494	20	CP	AC	Car	WDO-648S	$1^{1}/_{4}$	DD	Aut	Car	AC	Old	Ce	VB	No	Ful	No	Yes	TF	McC	18	No	No	$1^{5}/_{8}$	4	$1^{1}/_{2}$	$12^{7}/_{8}$	Var	46-48	$41^{1}/_{2}$	.790	Hay	18
19	Kaiser 491-492	21	CP	AC	Car	WCD-WA-1	$1^{1}/_{4}$	†	.....	.....	Car	AC-U	Hay	Ce	VB	No	Har	Yes	No	Cel	Fed	$13^{1}/_{2}$	Yes	Yes	$1^{1}/_{2}$	6	$1^{1}/_{2}$	$7^{1}/_{2}$	Gy	45	$43^{1}/_{4}$	$^{3}/_{8}$	Hay	19
20	Lincoln 9EL-9EH	$19^{1}/_{2}$	CP	AC	Hol	885-FFC	$1^{5}/_{32}$	DC	.....	Hol	AC	Old	Ce	VB	No	Ful	.....	Yes	TF	McC	$34^{1}/_{2}$	Yes	Yes	$1^{3}/_{4}$	$5^{1}/_{2}$	$1^{1}/_{2}$	$9^{1}/_{2}$	F-Gy	40	$38^{1}/_{4}$	.798	Sch	20
21	Mercury 9CM	$19^{1}/_{2}$	CP	AC-H	Hol	885-FFC	(p)	DC	Aut	Hol	Oakes	Var	Ce	VB	No	FT	.....	Yes	TF	Own	$22^{1}/_{4}$	Yes	Yes	$1^{3}/_{4}$	$5^{1}/_{2}$	$1^{1}/_{4}$	$13^{1}/_{2}$	F-Gy	43	38.2	.750	Sch	21
22	Nash 600-4940	20	CP	AC	Car	WAI-694S	$1^{1}/_{4}$	SD	Aut	Car	AC	Wal	Ce	VB	No	Dole	Yes	No	TF	McC	14	Yes	No	$1^{1}/_{2}$	$3^{1}/_{4}$	$1^{1}/_{2}$	$7^{3}/_{4}$	.....	32	$41^{13}/_{16}$	.781	Own	22
23	" Ambassador 4960	20	CP	AC	Car	WAI-683S	$1^{1}/_{4}$	SD	Aut	Car	AC	Wal	Ce	VB	No	Dole	Yes	No	TF	McC	17	Yes	Yes	$1^{1}/_{2}$	$3^{1}/_{4}$*	$1^{1}/_{4}$	7-8*	.....	32	$42^{5}/_{16}$	.781	Own	23
24	Oldsmobile Futuramic 76	18	CP	AC	Car	WAI	$1^{1}/_{2}$	SD	Aut	Car	AC	W-H	Ce	VB	No	Har	Yes	Yes	TV	Har	$18^{1}/_{2}$	Yes	Yes	$1^{3}/_{4}$	$14^{3}/_{16}$	$1^{1}/_{2}$	$8^{1}/_{4}$	Var	28	$43^{3}/_{8}$	.765	Own	24
25	" Futuramic 88	18	CP	AC	Var	.....	$1^{7}/_{16}$	DD	Aut	Var	AC	W-H	Ce	VB	No	Har	Yes	Yes	TV	Har	$21^{1}/_{2}$	Yes	Yes	$1^{3}/_{4}$	$13^{7}/_{8}$	$1^{1}/_{2}$	$9^{7}/_{16}$	Var	38	$39^{1}/_{4}$	.687	Own	25
26	" Futuramic 98	18	CP	AC	Var	.....	$1^{7}/_{16}$	DD	Aut	Var	AC	W-H	Ce	VB	No	Har	Yes	Yes	TV	Har	$21^{1}/_{2}$	Yes	Yes	$1^{3}/_{4}$	$14^{5}/_{8}$	$1^{1}/_{2}$	$11^{1}/_{8}$	Var	38	$39^{1}/_{4}$	.687	Own	26
27	Packard 8, 2201-2211	17	CP	AC	Car	WDO-644S	$1^{1}/_{4}$	DD	Aut	Car	.....	.....	Ce	VB	.....	.....	.....	.....	TF	.....	.....	.....	.....	$1^{3}/_{4}$	$12^{1}/_{4}$	$1^{3}/_{4}$	$32^{1}/_{4}$	.....	40	48.6	$^{3}/_{4}$	.....	27
28	" Super 8, 2202-22-32	20	CP	AC	Car	WDS-643S	$1^{1}/_{4}$	DD	Aut	Car	.....	.....	.....	.....	.....	.....	.....	.....	TF	.....	.....	.....	.....	$1^{3}/_{4}$	$12^{1}/_{4}$	$1^{3}/_{4}$	$33^{1}/_{4}$	.....	40	48.6	$^{3}/_{4}$	.....	28
29	" Cust. 8, 2206-26-33	20	CP	AC	Car	WDO-531S	$1^{1}/_{4}$	DD	Aut	Car	.....	.....	Ce	VB	.....	.....	.....	.....	TF	.....	.....	.....	.....	$1^{3}/_{4}$	$11^{1}/_{2}$	$1^{3}/_{4}$	$33^{1}/_{4}$	.....	42	53.0	1	.....	29
30	Plymouth P17-18	17	CP	.....	Car	.....	$1^{1}/_{2}$	SD	Aut	Sis	Var	.....	Ce	VB	No	.....	No	*	Cel	Fe-B	15	Yes	No	$1^{1}/_{2}$	(d)	$1^{3}/_{4}$	Cur	.....	38-42	$49^{11}/_{16}$	$^{7}/_{8}$	.....	30
31	Pontiac 6-25	$17^{1}/_{2}$	CP	AC	Car	WAI-537S	$1^{1}/_{4}$	DD	Aut	Car	AC	.....	Ce	VB	No	Har	Yes	Yes	Cel	Har	18.21	Yes	Yes	$1^{1}/_{2}$	$16^{1}/_{8}$	$1^{3}/_{4}$	$13^{1}/_{2}$	Var	28	$40^{11}/_{16}$	$^{25}/_{32}$	Own	31
32	" 8-27	$17^{1}/_{2}$	CP	AC	Car	WCD-630SB	$1^{1}/_{4}$	DD	Aut	Car	AC	.....	Ce	VB	No	Har	Yes	Yes	Cel	Har	20.31	Yes	Yes	$1^{1}/_{2}$	$13^{1}/_{2}$	$1^{1}/_{4}$	$8^{1}/_{2}$	Var	28	$40^{11}/_{16}$	$^{25}/_{32}$	Own	32
33	Studebaker 8G	17	CP	AC	Car	WE-681S	$1^{1}/_{4}$	SD	Aut	Car	AC	Wal	Ce	VB	No	BB	No	No	Cel	McC	10	Yes	No	$1^{1}/_{4}$	ET	$1^{1}/_{4}$	7	Var	42-48	$38^{3}/_{4}$	$^{11}/_{16}$	H-S	33
34	" 16A	17	CP	AC	Str	BXOV-26	$1^{1}/_{4}$	SD	Aut	Str	AC	Wal	Ce	VB	No	F-B	No	Yes	Cel	McC	13	Yes	No	$1^{1}/_{4}$	ET	$1^{1}/_{4}$	11	Var	42-48	$42^{1}/_{4}$	.902	Hay	34
35	Willys Jeepster VJ-2	15	CP	AC	Car	WAI-631S	$1^{1}/_{4}$	SD	Aut	.....	.....	.....	Ce	VB	No	Har	No	No	Cel	.....	11	Yes	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	35
36	" 4-63	15	CP	AC	Car	WO-613S	$1^{1}/_{4}$	SD	Aut	No	Oakes	Mak	Ce	VB	No	Har	No	No	TF	Jas	11	Yes	Yes	$1^{1}/_{2}$	(d)	$1^{1}/_{2}$	3	Var	45	*	$^{11}/_{16}$	Hay	36
37	" 6-63	15	CP	AC	Car	WO-613S	$1^{1}/_{4}$	SD	Aut	.....	.....	.....	Ce	VB	No	Har	No	No	Cel	.....	12	Yes	.....	.....	.....	.....	.....	.....	.....	.....	$38^{3}/_{8}$	.....	.....	37

ABBREVIATIONS

*—From W.P. to Cyl. Block $1^{1}/_{8}$ x $5^{1}/_{4}$.
**—Each.
†—Single on 491 and dual downdraft on 492.
^—By-pass used on P18 but not on P17.
*—Length outside 43.65 in.—44.33 in.
(a)—Stromberg AAV-167; Carter WCD-663S.
(b)—Stromberg AAV-267; Carter WCD-664S.
(c)—Carter WCD-682S on first series, then WCD-732S thereafter.
(d)—Two used: $1^{1}/_{2}$ x $1^{1}/_{2}$ and $1^{1}/_{2}$ x $8^{1}/_{2}$.
(e)—Two used: $1^{3}/_{4}$ x $4^{3}/_{4}$ and $1^{3}/_{4}$ x $4^{1}/_{4}$.
(m)—Venturi 1.217.
(n)—Venturi .94.
(p)—Venturi $^{21}/_{32}$.
AC—AC Spark Plug Div.
AC-H—AC or Holley.
AC-U—Ac and United.
Aut—Automatic.
Car—Carter Carburetor Co.
Ce—Centrifugal pump.
Cel—Cellular.
CP—Camshaft pump.
Cur—Curved.
DC—Downdraft dual concentric.
DD—Dual downdraft.
ET—Elbow type.
F-B—Fulton or Bishop & Babcock.
F-D—Fulton Syiphon or Dole.
Fe-B—Fedders or Blackstone.
Fed—Fedders Mfg. Co.
F-Gy—Firestone or Goodyear.
FT—Fulton and Thomas.
Ga—Gates Rubber Co.
GG—Gates and Goodyear.
Gy—Goodyear.
Har—Harrison Rubber Co.
Hay—Hayes Industries.
Hol—Holley Carburetor Co.
H-S—Hayes or Schweitser-Cummins.
Jas—Jamestown. Mak—MacKenzie.
McC—M. Cord Radiator Co.
No—No or None.
Old—Oldberg Mfg. Co.
S-C—Stromberg or Carter.
Sch—Schweitzer-Cummins.
SD—Single downdraft.
Sis—Sisson (Pierce Governor Co.)
Str—Stromberg Carburetor Co.
TF—Tube and fin.
Til—Tillotson Mfg. Co.
TV—Tubular Vee Cell.
US—United Specialties Co.
Var—Various.
VB—Vee belt.
VC—Vee cellular.
Wal—Walker Mfg. Co.
W-H—Walker or Hayes.
W-M—Walker-Michigan.
Yng—Young Radiator Co.

For page on which Directory of Manufacturers appears, see Table of Contents page 65

IGNITION SYSTEMS AND BATTERIES

Line Number	PASSENGER CAR MAKE AND MODEL	Make	Model	IGNITION: Max. Automatic Advance Deg. at What Engine R.P.M.	IGNITION: Inches Mercury Required for Vacuum Advance ±1 In.	IGNITION: Max. Vacuum Advance—Crankshaft Deg.	IGNITION: Breaker Point Gap In.	IGNITION: Breaker Point Arm Tension Oz.	IGNITION: Cam Angle Deg.	IGNITION: Timing Spark Occurs Deg.	IGNITION: Timing Marks On	IGNITION: Timing Firing Order	COIL: Amperage Draw Engine Stopped	COIL: Amperage Draw Engine Idling	SPARK PLUGS: Make	SPARK PLUGS: Model	SPARK PLUGS: Thread Size	SPARK PLUGS: Gap In.	Ignition Cable Make	BATTERY: Make	BATTERY: Capacity—Amp. Hrs. at .05 Min. Rate	BATTERY: Plates per Cell	BATTERY: Bench Charging Rate Start Amp.	BATTERY: Bench Charging Rate Finish Amp.	Terminal Grounded	Location	Line Number
1	Buick Special 40	DR	1110815	26-3000	6.00†	10-12	.015	19-23	*	4BT	Fly	1,6,2,5,8,3,7,4	4.5	2.5	AC	48	14	.025	Pak	DR	100	15	*	*	Neg	U-I	1
2	Super 50	DR	1110815	26-3000	6.00†	10-12	.015	19-23	*	4BT	Fly	1,6,2,5,8,3,7,4	4.5	2.5	AC	48	14	.025	Pak	DR	100	15	*	*	Neg	U-I	2
3	Roadmaster 70	DR	1110815	26-3000	6.00†	10-12	.015	19-23	*	6BT	Fly	1,6,2,5,8,3,7,4	4.5	2.5	AC	48	14	.025	Pak	DR	120	17	*	*	Neg	U-I	3
4	Cadillac 61	DR	1110812	36-3550	7.00‡	18-22	.015	19-23	31	5BT	VD	1,8,4,3,6,5,7,2	4.5	2.5	AC	48	14	.035	Pak	DR	115	17	10	8	Neg	RF	4
5	62	DR	1110812	36-3550	7.00‡	18-22	.015	19-23	31	5BT	VD	1,8,4,3,6,5,7,2	4.5	2.5	AC	48	14	.035	Pak	DR	115	17	10	8	Neg	RF	5
6	60	DR	1110812	36-3550	7.00‡	18-22	.015	19-23	31	5BT	VD	1,8,4,3,6,5,7,2	4.5	2.5	AC	48	14	.035	Pak	DR	115	17	10	8	Neg	RF	6
7	75	DR	1110812	36-3550	7.00‡	18-12	.015	19-23	31	5BT	VD	1,8,4,3,6,5,7,2	4.5	2.5	AC	48	14	.035	Pak	DR	115	17	10	8	Neg	RF	7
8	Chevrolet GJ-GK	DR	1112353	39.5-3450	7.00	20	.021	17-21	34	5BT	Fly	1,5,3,6,2,4	4.5	2.5	AC	46-5	14	.035	DR	DR	100	15	. . .	7	Neg	U-H	8
9	Chrysler C-45	AL	. . . . .	22-2850	4.00	16-20	.020	17-20	34½-38	4AT	VD	1,5,3,6,2,4	5.0	2.25	AL	Res	14	.038	. . .	W-A	120	17	. . .	. . .	Pos	UL	9
10	C46-47	. . . . .	. . . . .	22-3100	4.00	14-18	.020	17-20	27-30½	2AT	VD	1,6,2,5,8,3,7,4	5.0	2.25	. . .	. . .	. . .	.036	. . .	W-A	135	19	. . .	. . .	Pos	UL	10
11	Crosley CD	AL	IGW-4181	30-3200	No	. . .	.020	17-20	46	8BT	. . .	1,3,4,2	5.0	2.0	AL	AN-7E	14	.025	OEx	. . .	70	13	8	4	Pos	U-H	11
12	De Soto S-13	AL	. . . . .	22-2850	4.00	16-20	.020	17-20	34.5-38	4AT	VD	1,5,3,6,2,4	5.0	2.25	AL	Res	14	.038	. . .	W-A	110	17	. . .	. . .	Pos	UL	12
13	Dodge D29-30	. . . . .	. . . . .	. . . . .	. . .	. . .	.020	17-20	34.5-38	2AT	VD	1,5,3,6,2,4	5.0	2.23	AL	A-5R	14	.038	. . .	W-A	105	15	. . .	. . .	Pos	UL	13
14	Ford 8-98HA	Own	7HA	None	. . .	26	.025	17-20	35-38	TC	VD	1,5,3,6,2,4	5.5	3.0	CH	H-10	14	.030	. . .	. . .	100	17	9	4	Pos	U-H	14
15	98BA	Own	7RA	None	. . .	26	.015	17-20	28-30	2BT	CP	1,5,4,8,6,3,7,2	5.5	3.7	CH	H-10	14	.030	. . .	Var	103	17	9	4	Pos	U-H	15
16	Frazer 495-496	AL	IGS-4214	18-3450	10.0	10	.020	17-20	38	4BT	VD	1,5,3,6,2,4	. . .	. . .	AL	A-5	14	.032	Pak	Wil	100	15	. . .	. . .	Pos	U-H	16
17	Hudson 6 481-492	AL	CE-6006	24-4000	14.0	17	.020	17-20	39	TC	Fly	1,5,3,6,2,4	4.5	2.5	CH	J-7	14	.038	Ex	Nat	120	17	. . .	. . .	Pos	U-H	17
18	6, 493-494	AL	CE-6006	35-3400	14.0	17	.017	17-20	27	TC	Fly	1,6,2,5,8,3,7,4	4.5	2.5	CH	H-10	14	.039	Ex	Nat	120	17	. . .	. . .	Pos	U-H	18
19	Kaiser 491-492	AL	IGS-4214	18-3450	10.0	10	.020	17-20	39	4BT	VD	1,5,3,6,2,4	. . .	. . .	AL	A-5	14	.032	Pak	Wil	100	15	. . .	. . .	Pos	U-H	19
20	Lincoln 9EL-9EH	AL	8EL	24-3200	9.0	14	.016	17-20	28	4BT	VD	1,5,4,8,6,3,7,2	5.0	3.0	CH	H-10	14	.030	Ex	Var	120	17	9	4	Pos	U-H	20
21	Mercury 9CM	Own	7RA-C	None	. . .	26	.015	17-20	28	2BT	. . .	1,5,4,8,6,3,7,2	5.0	3.0	CH	H-10	14	.030	Ex	Var	100	17	9	4	Pos	U-H	21
22	Nash 600-4940	DR	1112351	22-2800	15.0	15	.021	17-21	35	TC	VD	1,5,3,6,2,4	. . .	. . .	AL	A-5	14	.033	. . .	AL	90	13	9	6	Pos	U-I	22
23	Ambassador 4960	DR	1110216	28-2700	15.0	12	.021	17-21	35	TC	VD	1,5,3,6,2,4	. . .	. . .	d	d	14	.033	. . .	AL	103	15	10	7	Pos	U-I	23
24	Oldsmobile Futuramic 76	DR	1110214	22-4000	6.0	16	.020	17-21	35	TC	Fly	1,5,3,6,2,4	4.5	2.0	AC	45	14	.040	GVI	DR	100	15	12.5	4.5	Neg	U-I	24
25	Futuramic 88	DR	1110814	30-4500	7.5	20	.015	19-23	22	2½BT	VD	1,8,7,3,6,5,4,2	4.5	2.0	AC	44	14	.030	GVI	DR	115	17	12.5	5¼	Neg	U-H	25
26	Futuramic 98	DR	1110814	30-4500	7.5	20	.015	19-23	22	2½BT	VD	1,8,7,3,6,5,4,2	4.5	2.0	AC	44	14	.030	GVI	DR	115	17	12.5	5¼	Neg	U-H	26
27	Packard 8, 2201-2211	a	(a)	8-9-12	. . .	7	.017	17-20	27♦	6BT	. . .	1,6,2,5,8,3,7,4	. . .	. . .	b	. . .	10	.028	. . .	W-A	100	15	. . .	. . .	Pos	UL	27
28	Super 8, 2202-22-32	a	(a)	8-9-12	. . .	7	.017	17-20	27♦	6BT	. . .	1,6,2,5,8,3,7,4	. . .	. . .	b	. . .	10	.028	. . .	W-A	103	15	. . .	. . .	Pos	UL	28
29	Cust. 8, 2206-26-33	AL	IGT-4203	8-9-12	. . .	5.5	.017	17-20	27	6BT	. . .	1,6,2,5,8,3,7,4	. . .	. . .	. . .	. . .	10	.028	. . .	AL	123	17	. . .	. . .	Pos	UL	29
30	Plymouth P17-18	AL	. . . . .	. . . . .	. . .	. . .	.020	17-20	34.5-38	2AT	VD	1,5,3,6,2,4	5.0	2.25	AL	A-5R	14	.038	. . .	W-A	103	15	. . .	. . .	Pos	UL	30
31	Pontiac 6-25	DR	. . . . .	25-40♦	7-9	25	.020	17-21	37	4BT	Fly	1,5,3,6,2,4	. . .	. . .	AC	45	14	.025	Pak	DR	103	15	7	7	Neg	UL	31
32	8-27	DR	. . . . .	25-40♦	7-9	25	.015	19-23	31	4BT	Fly	1,6,2,5,8,3,7,4	. . .	1.80	AC	45	14	.025	Pak	DR	103	15	7	7	Neg	UL	32
33	Studebaker 6G	AL	IGC-4805	14-2800	4.0	18	.020	17-20	38	2BT	VD	1,5,3,6,2,4	5.0	1.50	CH	J-7	14	.025	AW	Wil	103	15	5⅛	5⅛	Pos	UL	33
34	16A	AL	IGC-4802	22-1400	3.0	12	.020	17-20	38	2BT	VD	1,5,3,6,2,4	5.0	1.50	CH	J-7	14	.025	AW	Wil	103	15	5⅛	5⅛	Pos	UL	34
35	Willys Jeepster VJ-2	AL	IGW	. . . . .	. . .	. . .	.020	. . . . .	. . .	5BT	Fly	1,3,4,2	. . .	. . .	CH	AN-7	14	.030	AL	AL	103	15	. . .	. . .	Neg	U-H	35
36	4-63	AL	IGW-4189	22	3.5	20	.022	17-20	41	5BT	Fly	1,3,4,2	5.0	. . .	AL	AN-7	14	.030	AL	AL	103	15	. . .	. . .	Neg	U-I	36
37	6-63	AL	EO-8822	. . . . .	. . .	12	.020	. . . . .	. . .	TC	. . .	1,5,3,6,2,4	. . .	. . .	AL	A7-F	14	.030	AL	AL	103	15	. . .	. . .	Neg	U-I	37

ABBREVIATIONS

(a)—Auto-Lite 1GP-4502B or Delco 1110811.
(b)—AC-104, Champ. Y4R or Auto-Lite P-4.
(d)—AC-44 or Auto-Lite A5.

♦—Models 2211 and 2232 have cam angle of 31°.
†—Six to start, twelve for full travel.
‡—Seven to start, 14 for full travel.
*—At 40 miles per hour.
♦—Start 1 Amp. per positive plate, finish 1 Amp. per positive plate.

▲—Start 1 Amp. per positive plate, finish ½ Amp. per positive plate.
*—Do not recommend using dwell meter for checking point opening.
AC—Ac Spark Plug Div.
AL—The Electric Auto-Lite Co.
AT—After Top Center.

AW—American Enamel Mag. Wire Co.
BT—Before Top Center.
CH—Champion Spark Plug Co.
CP—Crankshaft pulley.
DR—Delco-Remy Div.
EX—Essex Wire Corp. Fly—Flywheel.
Nat—National Battery Co.

Neg—Negative. No—No or None.
OEx—Essex Wire Corp. Material Crosley Fabrication.
Pak—Packard Electric Co.
Pos—Positive.
RF—Right side under front fender.
Res—Resistor. TC—Top—Center.

UH—Under hood.
UL—Under hood—left side.
Var—Various.
VD—Vibration Damper.
W-A—Willard Storage Battery Co. or The Electric Auto-Lite Co.
Wil—Willard Storage Battery Co.

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1949 PASSENGER CARS

STARTING MOTORS, LAMPS AND HORNS

Line Number	PASSENGER CAR MAKE AND MODEL	STARTING MOTOR: Make	Model	Cranking Speed (R.P.M.)	Brush Spring Tension Oz.	Lock Test: Amperage Draw	Lock Test: Volts	Lock Test: Torque Lb. Ft.	No Load Test: Amperage Draw	No Load Test: Volts	No Load Test: R.P.M.	Type of Drive	Starting Device	Starting Operation	Pinion Meshes	Flywheel: No. of Teeth	Flywheel: Face Width of Teeth	Flywheel: Ratio to Starter Armature to 1	LAMPS: Make—Lighting Switch	LAMPS: Tail and Dash Lights in Series	LAMPS: Head Lamp—Make	LAMPS: Parking or Fender Light—Make	LAMPS: Tail and Stop Light—Make	HORN: Type	HORN: Number Used	HORN: Make	HORN: Amperage Draw of Each	Line Number
1	Buick Special 40	DR	1107049	90	24-28	575	3.40	12.0	65	5.0	5500	Sgo	Sol	Dap	F	146	31/64	16.22	DR	No	Guide	Guide	Guide	Vib	2	DR	18, 21	1
2	Super 50	DR	1107078	100	24-28	525	3.40	12.0	65	5.6	5000	Sgo	Sol	Dap	F	146	31/64	16.22	DR	No	Guide	Guide	Guide	Vib	2	DR	18, 21	2
3	Roadmaster 70	DR	1107953	105	24-28	600	3.00	16.0	65	5.6	5500	Sgo	Sol	Dap	F	156	41/64	17.33	DR	No	Guide	Guide	Guide	Vib	2	DR	18, 21	3
4	Cadillac 61	DR	1107945		24-28	600	3.00	16.0	65	5.6	5500		Sol	Pbd	F	145	1/2	16.10	DR	Yes	Guide	Guide	Guide	Vib	2	DR	18, 21	4
5	62	DR	1107945		24-28	600	3.00	16.0	65	5.6	5500		Sol	Pbd	F	145	1/2	16.10	DR	Yes	Guide	Guide	Guide	Vib	2	DR	18, 21	5
6	60	DR	1107945		24-28	600	3.00	16.0	65	5.6	5500		Sol	Pbd	F	145	1/2	16.10	DR	Yes	Guide	Guide	Guide	Vib	2	DR	18, 21	6
7	75	DR	1107945		24-28	600	3.00	16.0	65	5.6	5500		Sol	Pbd	F	145	1/2	16.10	DR	Yes	Guide	Guide	Guide	Vib	2	DR	18, 21	7
8	Chevrolet GJ-GK	DR	1107075	125	24-28	525	3.40	12.0	65	5.0	5500	Sgo	Sol	Pbd	F	139	1/2	15.44	DR	No	Guide	Guide	Guide	Vib	2	DR	17, 21	8
9	Chrysler C-45	AL												Bik	F	146	1/2	16.22		No				Vib	2		20	9
10	C46-47	AL										Sgo	Sol	Bik	F	146	1/2	16.22		No				Vib	2		20	10
11	Crosley CD	AL	MZ-4147	250		280	2.00	4.4	70	5.5	4300	Ben	Sol	Pbd	R	88	3/8	8.80	Dge	No	AL	AL	AL	Vib	1	Spar	7	11
12	DeSoto S-13	AL										Sgo	Sol	Bik	F	146	1/2	16.22		No				Vib	2			12
13	Dodge D29-30	AL											Sol	Bik	F	146	1/2	16.22		No					2		20	13
14	Ford 6-98HA	Own	7RA	150	27	550	3.75	15.0	50	5.8	6500	Ben	Sol	Pbd	R	114	3/8	12.70		No	Own	Own	Own	Vib	2		15	14
15	V8-98BA	Own	7RA	130	27	550	3.75	15.0	50	5.8	6500	Ben	Sol	Pbd	R	112	3/8	11.20		No	Own	Own	Own	Vib	2		15	15
16	Frazer 495-496	AL	MAW-4054		42-53	505	3.00	11.5	65	5.5	4900	Ben	Sol	Pbd	F	130		14.44	C-H	No	Hall	AL	AL	Vib	2	ASW		16
17	Hudson 6, 491-492	AL	MCL-6006		53	880	4.00	25.0	58	5.5	5600	Ben	Sol	Pbd	R	134	13/32	14.90	JPH	No	Hall	AL	AL	Vib	2	S-W	15	17
18	8, 493-494	AL	MCL-6006		53	880	4.00	25.0	58	5.5	5600	Ben	Sol	Pbd	R	134	13/32	14.90	JPH	No	Hall	AL	AL	Vib	2	S-W	15	18
19	Kaiser 491-492	AL	MAW-4054		42-53	505	3.00	11.5	65	5.5	4900	Ben		Pbd	F	130		14.44	C-H	No	Hall	Hall	Hall	Vib	2	S-W		19
20	Lincoln 9EL-9EH	Own	5EH		48-56	550	3.25	15.0	52	5.8	6500	Ben	Sol	Pbd	R	120	3/8	12.00	Rbm	No	Own	Own	Own	Vib	2	ASW	14	20
21	Mercury 9CM	Own	7RA		48-56	550	3.25	15.0	52	5.8	6500	Ben	Sol	Pbd	R	112	3/8	11.20	Rbm	No	Own	Own	Own	Vib	2	ASW	14	21
22	Nash 600-4940	DR	1109451		24-28	540	3.30	11.5	60	5.7	6000	Ben	Man	Dcp	R	122	7/16	13.50	Dge	No	Hall	C-B	C-B	Vib	2	AL	15	22
23	Ambassador 4960	DR	1107950		24-28	600	3.00	16.0	60	5.0	6000	Ben	Man	Dcp	R	104	7/16	10.40	Dge	No	Hall	C-B	C-B	Vib	2	AL	15	23
24	Oldsmobile Futuramic 76	DR	1107955	100	24-28	600	3.00	15.0	65	5.0	6000	Sgo	Sol	Pbd	F	145	1/2	16.11	DR	No	Guide	Guide	Guide	Vib	2	DR	18, 20	24
25	Futuramic 88	DR	1107956	100	24-28	600	3.00	15.0	60	5.0	6000	Sgo	Sol	Pbd	F	145	3/8	16.11	DR	No	Guide	Guide	Guide	Vib	2	DR	18, 20	25
26	Futuramic 98	DR	1107956	100	24-28	600	3.00	15.0	60	5.0	6000	Sgo	Sol	Pbd	F	145	3/8	16.11	DR	No	Guide	Guide	Guide	Vib	2	DR	18, 20	26
27	Packard 8, 2201-2211	(a)	(a)									Ben		Pbd	F	140		16.00								S-W	22, 25	27
28	Super 8, 2202-22-32	(a)	(a)									Ben		Pbd	F	140		16.00								S-W	22, 25	28
29	Cust. 8, 2206-26-33	AL	MAX-4052										Sol	Pbd	F	140		16.00								S-W	22, 25	29
30	Plymouth P17-18	AL										Ben		Bik	F	146	1/2	16.22		No					2		20	30
31	Pontiac 6-25	DR	1107032	44	24-28	525	3.37	12.0	65	5.0	5000	Sgo	Sol	Pbd	R	140	1/2	15.55	DR	No	Guide	Guide	Guide	Vib	2	DR	18, 21	31
32	8-27	DR	1107921	50	24-28	600	3.00	15.0	60	5.0	6000	Sgo	Sol	Pbd	R	140	1/2	15.55	DR	No	Guide	Guide	Guide	Vib	2	DR	18, 21	32
33	Studebaker 8G	AL	MZ-4136	130	42-53	560	4.00	11.8	70	5.5	4300	Ben	Sol	Pbd	F	124	1/2	13.77	Dge	No	C-B	C-B	C-B	Vib	2	DRS	12, 15	33
34	16A	AL	MAW-4020A	130	42-53	670	4.00	18.0	65	5.5	4900	Ben	Sol	Pbd	F	133	1/2	14.78	Dge	No	C-B	C-B	C-B	Vib	2	DRS	12, 15	34
35	Willys Jeepster VJ-2	AL	MZ-4137	160	42-53	420	3.00	7.8	70	5.5	4300	Man		Dap	F	124	3/8	13.78	CS	No	C-B	Dge	C-B	Vib	1	AL	7, 9	35
36	4-63	AL	MZ-4137	160	42-53	420	3.00	7.8	70	5.5	4300	Man		Dap	F	124	3/8		CS	No	C-B	Dge	C-B	Vib	1	AL	7, 9	36
37	6-63	AL	MZ-4137	160	42-53	420	3.00	7.8	70	5.5	4300	Man		Dap	F	124	3/8	13.78	CS	No	C-B	Dge	C-B	Vib	1	AL	7, 9	37

ABBREVIATIONS

(a)—Auto-Lite MCL-6003 or Delco-Remy 1107943.
AL—The Electric Auto-Lite Co.
ASW—Auto-Lite and Sparks-Withington.
Ben—Bendix-Eclipse Machine Div.
Bik—By ignition key, turned beyond "on" position.
C-B—Corcoran-Brown Lamp Div.
C-H—Cole-Hersee.
CS—Culver-Stearns.
Dap—Depress accelerated pedal.
Dcp—Depress clutch pedal.
Dge—H. A. Douglas Mfg. Co.
DR—Delco-Remy Div.
DRS—Delco-Remy and Sparton.
Dsp—Depress starter pedal.
F—Front.
Guide—Guide Lamp Div.
Hall—C. M. Hall Lamp Co.
JPH—Jos. Pollach and Cole-Hersee.
Man—Manual.
Pbd—Push button on dash.
R—Rear.
Rbm—R. B. M. Mfg. Co.
Sgo—Sliding gear with overrunning clutch.
Sol—Solenoid.
Spar—Sparton.
S-W—Sparks-Withington Co.
Vib—Vibrator.

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1949 PASSENGER CARS

GENERATORS AND CLUTCHES

Line Number	PASSENGER CAR MAKE AND MODEL	GENERATOR: Make	Model	Type	Brush Spring Tension (Oz.)	Charging Control	Maximum Controlled Charging Rate: Temperature (°F)	Amperes	Voltage	R.P.M.	Cutout Relay: Voltage at Closing	Amperes to Open Reverse Current	Average Air Gap (In.)	Voltage Regulator: Volts	Temperature (°F)	Average Air Gap (In.)	Current Regulator: Amperes	Temperature (°F)	Average Air Gap (In.)	Car Speed Max. Charging Rate—M.P.H.	Ammeter—Make	CLUTCH: Make	Drive Type	Semi-Centrifugal	Vibration Insulator	Facings: Material	Inside Diam. (In.)	Outside Diam. (In.)	Thickness (In.)	No. Required	Line Number
1	Buick Special 40	DR	1102679	Shu	24-28	CV	Hot	35	8.0	2600	6.1-6.8	1-6	.020	7.4	150	.070	34-36	150	.085	25	AC	Own*	Dff	No	Spr	Wo	6	10	.125	2	1
2	Super 50	DR	1102709	Shu	24-28	CV	Hot†	40†	8.0†	2400†	6.1-6.8	1-6	.020	7.2-7.7	150	.075	40-46†	150	.075	25	AC	Own*	Dff	No	Spr	Wo	6	10	.125	2	2
3	Roadmaster 70	DR	1102708	Shu	24-28	CV	Hot†	40†	8.0†	2400†	6.1-6.8	1-6	.020	7.2-7.7	150	.075	40-46†	150	.075	25	AC	None									3
4	Cadillac 61	DR	1102700	Shu	24-28	CV	150	42	8.0	2400	5.9-6.8	0-3	.020	7.0-7.7	150	.075	40-46	150	.075	28‡	AC	Long*	Dff	Yes	Spr	Wo	7	10½	.137	2	4
5	62	DR	1102700	Shu	24-28	CV	150	42	8.0	2400	5.9-6.8	0-3	.020	7.0-7.7	150	.075	40-46	150	.075	28‡	AC	Long*	Dff	Yes	Spr	Wo	7	10½	.137	2	5
6	60	DR	1102700	Shu	24-28	CV	150	42	8.0	2400	5.9-6.8	0-3	.020	7.0-7.7	150	.075	40-46	150	.075	28‡	AC	Long*	Dff	Yes	Spr	Wo	7	10½	.137	2	6
7	75	DR	1102700	Shu	24-28	CV	150	42	8.0	2400	5.9-6.8	0-3	.020	7.0-7.7	150	.075	40-46	150	.075	28‡	AC	Long*	Dff	Yes	Spr	Wo	7	11	.137	2	7
8	Chevrolet GJ-GK	DR	1102710	Shu	24-28	CV	72	36	7.4	2400	6.4	0-4	.020	7.4	Opr	.080	36	Opr	.080	25.7	AC	(b)	Dff	No	Spr	Mo	6½	9½	.135	2	8
9	Chrysler C-45			Shu				40															Dff	No	Spr	MWA	7	10	.125	2	9
10	C-46	AL		Shu		CV																	Dff	No	Spr	MWA	6	10	.125	2	10
11	C-47	AL		Shu		CV																	FD	No	Spr	MWA	6	10	.125	2	11
12	Crosley CD	AL	GDZ-4806	Shu	35-53	CV		35	8.0	1900	6.4-7.0	4-6	.032	7.35	70		34-36		.050	40.0	SW	Rock	Dff	No		Mo	4	6	.125	2	12
13	De Soto S-13	AL		Shu																		B&B	Dff	No	Spr	MWA	7	10	.125	2	13
14	Dodge D29-30			Shu		CV																	FD	No	Spr	MWA	6	9¼	.125	2	14
15	Ford 8-98HA	Own	8HA	Shu	22	CV	98	30^	7.1^	1875^	6.2-7.0	8	.010	7.2-7.6	Opr	.035	30-34	Opr	.035	20	Ow		Dff	Yes	Spr	Wo	6	9½	.125	2	15
16	V8-98BA	Own	8EA	Shu	22	CV	98	30^	7.1^	1875^	6.2-7.0	8	.010	7.2-7.6	Opr	.035	30-34	Opr	.035	20	Ow	Long	Dff	Yes	Spr	Wo	6	9½	.125	2	16
17	Frazer 495-496	AL	GDZ-4818A	Shu	35-53	CV	70	35	7.5	2250	6.4-7.0	4.5	.032	7.35±.15	70	.050	34-36	70	.050	24	AL	B&B	Dff		Spr	Wo	6	9¼	.125	2	17
18	Hudson 6, 491-492	AL	GEC-4801A	TB	53	V	C°	43°	8.0°	3200°	6.4-7.0	2		7.1-7.4	70					35	IL	Own	Dff	No	Spr	Cork	6¾	9 13/16	.203	108	18
19	8, 493-494	AL^	GEC-4801A	TB	53	V	C°	43°	8.0°	3200°	6.4-7.0	2		7.1-7.4	70					35	IL	Own	Dff	No	Spr	Cork	6¾	9 13/16	.203	108	19
20	Kaiser 491-492	AL	GDZ-4818A	Shu	35-53	CV	70	35	7.5C	2250	6.4-7.0	4.5	.032	7.35-.15	70	.050	34-36	70	.050	24	KS	B&B	Dff		Spr	Wo	6	9¼	.125	2	20
21	Lincoln 9EL-9EH	Own	8EL	Shu	22	CV	90	40	7.1	1675	6.6-7.0	8	.010	7.2-7.6		.035	38-42		.035	19.5	Own	Long	Dff	Yes	Spr	Wo	7	10½	.125	2	21
22	Mercury 9CM	Own	8BA	Shu	22	CV	90	30	7.1	1670	6.6-7.0	8	.010	7.2-7.6		.035	30-34		.035	18.6	Own	B&B	Dff	No	Spr	Wo	6¾	10	.125	2	22
23	Nash 600-4940	DR	1102702	Shu	24-28	CV		35	7.4		6.2-6.7	5	.020	7.2-7.4		.070	32-35		.080		AL	B&B	Dff	No	Spr		6⅝	8	.125	2	23
24	Ambassador 4960	DR	1102702	Shu	24-28	CV		35	7.4		6.2-6.7	5	.020	7.2-7.4		.070	32-35		.080		AL	B&B	Dff	No	Spr	We	7	10	.125	2	24
25	Oldsmobile Futuramic 76	DR	1102706	Shu	24-28	CV	70	40	8.0	1880	6.5	2	.020	7.3	150	.075	40	150	.075	22.0	AC	B&B	Dff	No	Spr	MW	7	10	.125	2	25
26	Futuramic 88	DR	1102704	Shu	24-28	CV	70	40	8.0	1880	6.5	2	.020	7.3	150	.075	40	150	.075	22.0	AC	No									26
27	Futuramic 98	DR	1102704	Shu	24-28	CV	70	40	8.0	1880	6.5	2	.020	7.3	150	.075	40	150	.075	21.0	AC	No									27
28	Packard 8, 2201-2211	(a)	(a)	Shu	Max53	CV	H-C	35	7.4		6.5-7.0	4-6	.032	7.2-7.5	70	.050	35	H-C	.050				Dff	Yes	Spr	Wo	6¾	10	.125	2	28
29	Super 8, 2202-22-32	(a)	(a)	Shu	Max53	CV	H-C	35	7.4		6.5-7.0	4-6	.032	7.2-7.5	70	.050	35	H-C	.050				Dff	Yes	Spr	Wo	7	10½	.125	2	29
30	Cust. 8, 2206-26-33	AL	GDZ-4801G	Shu	Max53	CV	H-C	35	7.4		6.5-7.0	4-6	.032	7.2-7.5	70	.050	35	H-C	.050				Dff	Yes	Spr	Wo	7	11	.125	2	30
31	Plymouth P17-18	AL		Shu		CV																	Dff	No	Spr	MWA	6	9¼	.125	2	31
32	Pontiac 6-25	DR	1102665	Shu	22-26	CV	Hot	34	7.4	1140	6.2-6.7	0-4	.020	7.2-7.4	Hot	.072	32-34	Hot	.082	25.0	AC	Ini	Dff		Spr	Wo	6	9½	.125	2	32
33	8-27	DR	1102665	Shu	22-26	CV	Hot	34	7.4	1140	6.2-6.7	0-4	.020	7.2-7.4	Hot	.072	32-34	Hot	.082	25.0	AC	Ini*	Dff		Spr	Wo	6	9½	.125	2	33
34	Studebaker 8Q	AL	GDZ-4804A	Shu	53	CV	70	35	7.3	1900	6.4-6.6	4-6	.036	7.35	70	.050	34-36	70	.050	20.2	SW	B&B	Dff	No	Spr	MM	5⅞	8	.125	2	34
35	16A	AL	GDZ-4804A	Shu	53	CV	70	35	7.3	1900	6.4-6.6	4-6	.036	7.35	70	.050	34-36	70	.050	21.6	SW	B&B	Dff	No	Spr	MM	6	9¼	.125	2	35
36	Willys Jeepster VJ-2	AL	GDZ-4817A	Shu	35-53	CV	80	37	8.0	1900	6.4-7.0	4-6	.032	7.2-7.5	70	.050	34-36	70	.050		KS	ABB	Dff		Spr	Mo	5 5/32	8½	.135	2	36
37	4-63	AL	GDZ-4817A	Shu	35-53	CV	80	37	8.0	1900	6.4-7.0	4-6	.032	7.2-7.5	70	.050	34-36	70	.050		KS	ABB	Dff		Spr	Mo	5 5/32	8½	.135	2	37
38	6-63	AL	GDZ-4817A	Shu	35-53	CV	80	37	8.0	1900	6.4-7.0	4-6	.032	7.2-7.5	70	.050	34-36	70	.050		KS	ABB	Dff		Spr	Mo	5 5/32	8½	.135	2	38

ABBREVIATIONS

*—Long or Borg & Beck disc.
†—Uncontrolled—field coil grounded direct.
‡—Voltage regulator shorted out.
§—At minimum.
**—With Hydra-Matic Drive, at extra cost, there is no clutch.
°—Hot—37 amps, 5 volts at 3600 rpm.
^—Generator rating.
(a)—Auto-Lite GDZ-4801. For Delco 1102699.
(b)—Driven disc is by Borg & Beck and Own, remainder, Own and Inland.
AC—Ac Spark Plug Co.
ABB—Auburn with Borg & Beck plate.
AL—The Electric Auto-Lite Co.
B&B—Borg & Beck Div.
Co—Cork.
CV—Current and Voltage Regulator.
Dff—Direct to flywheel face.
DR—Delco-Remy Div.
FD—Fluid drive.
H-C—Hot or Cold.
IL—Indicating light.
Ini—Inland Mfg. Co.
KS—King-Seely Corp.
Long—Long Mfg. Div.
Max—Maximum.
MM—Moulded Metallic.
Mo—Moulded asbestos.
MW—Moulded on one face, woven on other face.
MWA—Moulded woven asbestos.
No—No or None.
Opr—Operating temperature.
Rock—Rockford Drilling Mach. Div.
Shu—Shunt.
Spr—Springs.
SW—Stewart-Warner Corp.
TB—Third brush type.
V—Voltage regulator.
We—Woven asbestos.

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1949 PASSENGER CARS

TRANSMISSIONS AND UNIVERSAL JOINTS

Line Number	PASSENGER CAR MAKE AND MODEL		TRANSMISSION: Conventional	TRANSMISSION: Automatic: Name	Type	Make	OVERDRIVE: Lubrication: Capacity Pts.	Grade S.A.E. No: Summer	Winter	GEAR RATIOS—STD. (to-1): Rear Axle	Overdrive	Transmission: Low	Second	Reverse	Constant Mesh Gears on Second	TYPE GEARS: Second Speed	First Speed	Reverse	Synchronous Meshing Second and Third Gears	TRANSMISSION LUBRICATION: Capacity Pts.	Grade S.A.E. No: Summer	Winter	UNIVERSAL JOINTS: Make	Number Used	Type	Lubricated With	Drive Medium	Torque	Line Number
1	Buick	Special 40	Yes	No	No	No	No	No	No	4.45	No	2.67	1.66	3.02	Y	Hel	Hel	Hel	Y	$11\frac{3}{4}$	90	90	S-S	1	Mp	TL	TT	TT	1
2		Super 50	Yes	Dynaflow*	Hyd*	No	No	No	No	4.10	No	2.67	1.66	3.02	Y	Hel	Hel	Hel	Y	$13\frac{1}{4}$	90	90	S-S	1	Mp	TL	TT	TT	2
3		Roadmaster 70	No	Dynaflow	Hyd	No	No	No	No	4.10	No	1.82		1.82				HP	HP	22	Own	Own	Sag	1	Mp	TL	TT	TT	3
4	Cadillac	61	Yes	Hydramatic*	Hyd*	No	No	No	No	3.77	No	2.39	1.53	2.39	Y	Hel	Hel	Hel	Y	$33\frac{3}{4}$	90	90	Mec	2	Nb	PL	Spr	Spr	4
5		62	Yes	Hydramatic*	Hyd*	No	No	No	No	3.77	No	2.39	1.53	2.39	Y	Hel	Hel	Hel	Y	$33\frac{3}{4}$	90	90	Mec	2	Nb	PL	Spr	Spr	5
6		60	Yes	Hydramatic*	Hyd*	No	No	No	No	3.77	No	2.39	1.53	2.39	Y	Hel	Hel	Hel	Y	$33\frac{3}{4}$	90	90	Mec	2	Nb	PL	Spr	Spr	6
7		75	Yes	Hydramatic*	Hyd*	No	No	No	No	4.27	No	2.39	1.53	2.39	Y	Hel	Hel	Hel	Y	$33\frac{3}{4}$	90	90	Mec	2	Nb	PL	Spr	Spr	7
8	Chevrolet	GJ-GK	Yes	No	No	No	No	No	No	4.11	No	2.94	1.68	2.94	Y	Hel	Hel	Hel	Y	$11\frac{1}{2}$	90	90	Own	1	Mp	PL	Spr	TT	8
9	Chrysler	C-45	Yes	Presto-matic*	Hyd*	No	No	No	No	3.90	No	2.57	1.83	3.48	Y	Hel	Hel	Hel	Y	$23\frac{1}{4}$	80	80		2		Gr	Spr	Spr	9
10		C-46	Yes	Presto-matic*	Hyd*	No	No	No	No	3.91	No	2.57	1.83	3.48	Y	Hel	Hel	Hel	Y	$23\frac{1}{4}$	80	80		2	Mta	Gr	Spr	Spr	10
11		C-47	No	Presto-matic	Hyd	No	No	No	No	3.58	No	3.57	2.04	3.99	Y	Hel	Hel	Hel	Y	3	10W	10W		3	Mta	Gr	Spr	Spr	11
12	Crosley	CD	Yes	No	No	No	No	No	No	5.17	No	3.29	1.72	3.29	N	Sp	Sp	Sp	N	1	90	90	NEA	1	Mp	Gr	TT	TT	12
13	De Soto	S-13	Yes	Tip-Toe Shift*	Hyd*	No	No	No	No	3.73	No	2.57	1.83	3.48	Y	Hel	Hel	Hel	Y	$23\frac{1}{4}$	80	80		2	Mta	Gr	Spr	Spr	13
14	Dodge	D-29	Yes	No	No	No	No	No	No	3.90	No	2.57	1.83	3.48		Hel	Hel	Hel		$23\frac{1}{4}$	80	80		2		Gr	Spr	Spr	14
15		D-30	Yes	Gyromatic*	Hyd*	No	No	No	No	4.10	No	2.57	1.83	3.48		Hel	Hel	Hel		$23\frac{1}{4}$	80	80		2		Gr	Spr	Spr	15
16	Ford	6-98HA	Yes	No	No	No	No	No	No	3.73	No	2.81	1.60	3.62	Y	Hel	Hel	Hel	Y	4	80	80		2	Nb	Gr	Spr	Spr	16
17		V8-98BA	Yes	No	No	*	4.5	80	80	3.73	.70*	2.81	1.60	3.62	Y	Hel	Hel	Hel	Y	4	80	80		2	Nb	Gr	Spr	Spr	17
18	Frazer	495-496	Yes	No	No	WG*	1.0	90	80	4.09	.70*	2.57	1.55	3.48	Y	Hel	Hel	Hel	Y	$21\frac{1}{2}$	90	80	UP	3			Spr	Spr	18
19	Hudson	6, 491-492	Yes	Drivemaster	E-Vac*	WG*		90	80	4.10	.70*	2.61	1.65	3.17	Y	Hel	Hel	Hel	Y	2	90	80	Spi	3	Nb	Gr	Spr	Spr	19
20		8, 493-494	Yes	Drivemaster	E-Vac*	WG*		90	80	4.10	.70*	2.61	1.65	3.17	Y	Hel	Hel	Hel	Y	2	90	80	Spi	3	Nb	Gr	Spr	Spr	20
21	Kaiser	491-492	Yes	No	No	*				4.09	*	2.57	1.55	3.48	Y	Hel	Hel	Hel	Y	$21\frac{1}{2}$	90	80	UP	3			Spr	Spr	21
22	Lincoln	9EL-9EH	Yes	No	No	WG*				3.91	.722*	2.52	1.51	3.15	Y	Hel	Hel	Hel	Y	$31\frac{1}{2}$	80	80	Spi	2	Nb	Gr	Spr	Spr	22
23	Mercury	9CM	Yes	No	No	WG*		80	80	3.91	.700*	2.81	1.60	3.62	Y	Hel	Hel	Hel	Y	$31\frac{1}{2}$	80	80	Mec	2	Nb	Gr	Spr	Spr	23
24	Nash	600-4540	Yes	No	No	WG*	$11\frac{3}{4}$	90	80	4.40	.700*	2.57	1.62	3.48	Y	Hel	Hel	Hel	Y	$21\frac{1}{4}$	90	80	M-S	1	Mta	PL	TT	TT	24
25		Ambassador 4960	Yes	No	No	WG*	2.0	90	80	4.10	.700*				Y	Hel	Hel	Hel	Y	4	90	80	M-S	1	Mta	PL	TT	TT	25
26	Oldsmobile	Futuramic-76	Yes	Hydramatic*	Hyd*	No	No	No	No	4.10	No	2.66	1.66	3.02	Y	Hel	Hel	Hel	Y	2	90	90	Mec	2	Mta	PL	SA	SA	26
27		Futuramic-88	No	Hydramatic	Hyd	No	No	No	No	3.23	No	3.81	2.63	4.30						44	Own	Own	Mec	2	Mta	PL	SA	SA	27
28		Futuramic-98	No	Hydramatic	Hyd	No	No	No	No	3.63	No	3.81	2.63	4.30						44	Own	Own	Mec	2	Mta	PL	SA	SA	28
29	Packard	8, 2201-2211	Yes		E-Vac*	*	$11\frac{1}{4}$	140	50	3.90	.76*	2.43	1.53	3.16	Y	Hel	Hel	Hel	Y	2	140	90	Mec	2	Rb	RG	Spr	Spr	29
30		Super 8, 2202-22-32	Yes		E-Vac*	*	$11\frac{1}{4}$	140	90	3.90	.76*	2.43	1.53	3.16	Y	Hel	Hel	Hel	Y	2	140	90	Mec	2	Rb	RG	Spr	Spr	30
31		Cust. 8, 2206-26-33	Yes		E-Vac*	*	$11\frac{1}{4}$	140	50	3.92	.76*	2.43	1.53	3.16	Y	Hel	Hel	Hel	Y	2	140	90	Mec	2	Rb	RG	Spr	Spr	31
32	Plymouth	P17-18	Yes	No	No	No	No	No	No	3.90	No	2.57	1.83	3.48	Y	Hel	Hel	Hel	Y	$23\frac{1}{4}$	80	80	UP	2	Mta	Gr	Spr	Spr	32
33	Pontiac	6-25	Yes	Hydramatic*	Hyd*	No				4.10	No	2.67	1.66	3.02	Y	Hel	Hel	Hel		$13\frac{1}{4}$	90	90	M-S	2	Mta	PL	Spr	Spr	33
34		8-27	Yes	Hydramatic*	Hyd*	No				4.10	No	2.67	1.66	3.02	Y	Hel	Hel	Hel		$13\frac{1}{4}$	90	90	M-S	2	Mta	PL	Spr	Spr	34
35	Studebaker	8G	Yes			WG*	2.4	90	90	4.10	.70*	2.60	1.63	3.53	Y	Hel	Hel	Hel	Y	$11\frac{1}{2}$	90	80	Spi	3	Mta	Gr	Spr	Spr	35
36		16A	Yes			WG*	3.2	90	90	4.09	.70*	2.57	1.55	3.48	Y	Hel	Hel	Hel	Y	2.4	90	90	Spi	3	Mta	Gr	Spr	Spr	36
37	Willys	Jeepster VJ-2	Yes			WG	1.5	90	80	4.88	.70	2.60	1.63	3.53	Y	Hel	Hel	Hel	Y	1.5	90	80	Spi	2	Mta	Gr	Spr	Spr	37
38		4-63	Yes			WG*	1.5	90	80	4.88	.70*	2.60	1.63	3.53	Y	Hel	Hel	Hel	Y	1.5	90	80	Spi	2	Mta	Gr	Spr	Spr	38
39		6-63	Yes			WG	1.5	90	80	5.38	.70	2.60	1.63	3.53	Y	Hel	Hel	Hel	Y	1.5	90	80	Spi	2	Mta	Gr	Spr	Spr	39

ABBREVIATIONS

* At extra cost.
Aut—Automatic.
E—Vac-Electric-Vacumatic
Gr—Grease
Hel—Helical.
HP—Helical-Planetary Set.
Hyd—Hydraulic.
Mec—Mechanics Universal Joint Div.
Mp—Metal with plain bearings
M-S—Mechanics or Saginaw.
Mta—Metal with anti-friction bearings.
Nb—Needle bearing.
NEA—New England Auto Products.
No—No or None.
PL—Permanent lubrication.
Rb—Roller-bearing type.
RG—Repack with gun grease.
SA—Stabilizing arms.
Sag—Saginaw Steering Gear Div.
Spr—Springs.
S-S—Saginaw Steering Gear Div. or Spicer Mfg. Co
Sp—Spur.
Spi—Spicer Mfg. Co
TL—Transmission lubricant
TT—Torque tube.
UP—Universal Products
WG—Warner Gear Div.
Y—Yes.

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1949 PASSENGER CARS

STEERING AND BRAKES

Line Number	PASSENGER CAR MAKE AND MODEL	STEERING: Gear Type	Gear Make	Gear Ratio to 1	Drag Link-Type	No. of Tie Rods	Intermediate Arm	Car Turning Radius Right Ft.	Caster Deg.	Camber Deg.	Toe-in In.	Kingpin Inclination Deg.	FOOT BRAKES: Make	Type	Type Lining: Primary Shoe	Type Lining: Secondary Shoe	Drums: Material	Drums: Diameter In.	Lining: Length per Wheel In.	Lining: Width In.	Lining: Thickness In.	Clearance: Toe	Clearance: Heel	Total Foot Braking Area Sq. In.	Per Cent Braking on Rear Wheels	HAND BRAKES: Operates	Internal or External	Drum Diameter In.	Lining: Length per Drum (In.)	Lining: Width In.	Lining: Thickness (In.)	Lining: Clearance (In.)	Line Number
1	Buick Special 40	BW	Sag	18.8	No	2	N	20.1	$1/4$P to $1\frac{1}{2}$P	$\frac{7}{8}$P to $\frac{5}{8}$N	$\frac{1}{16}$ to $\frac{1}{8}$	$4\frac{1}{4}$°	B-D	H	Mo	Mo	CI	12	$23\frac{1}{16}$	$1\frac{3}{4}$	$\frac{3}{16}$	.015	.015	161.5	47.0	RS							1
2	Super 50	BW	Sag	18.8	No	2	N	21.5	$1/4$P to $1\frac{1}{2}$P	$\frac{7}{8}$P to $\frac{5}{8}$N	$\frac{1}{16}$ to $\frac{1}{8}$	$4\frac{1}{4}$°	B-D	H	Mo	Mo	CI	12	$23\frac{1}{16}$	$1\frac{3}{4}$	$\frac{3}{16}$	.015	.015	161.5	47.0	RS							2
3	Roadmaster 70	BW	Sag	23.6	No	2	N	22.9	$1/2$P to $1\frac{1}{2}$P	$\frac{7}{8}$P to $\frac{5}{8}$N	$\frac{1}{16}$ to $\frac{1}{8}$	$4\frac{1}{4}$°	B-D	H	Mo	Mo	CI	12	$23\frac{1}{16}$	$2\frac{1}{4}$	$\frac{3}{16}$	.015	.015	207.5	47.0	RS							3
4	Cadillac 61	RB	Sag	21.3	Tra	2	N	23.3	$1/2$N to $1/2$P	$\frac{3}{8}$N to $\frac{3}{8}$P	$\frac{1}{32}$N to $\frac{3}{32}$N	5 51′ at 0	Ben	H	Mo	Mo	Com	12	$24\frac{1}{2}$	$2\frac{1}{2}$	$\frac{3}{16}$	.008	.008	220.0	44.2	RS							4
5	62	RB	Sag	21.3	Tra	2	N	23.3	$1/2$N to $1/2$P	$\frac{3}{8}$N to $\frac{3}{8}$P	$\frac{1}{32}$N to $\frac{3}{32}$N	5 51′ at 0	Ben	H	Mo	Mo	Com	12	$24\frac{1}{2}$	$2\frac{1}{2}$	$\frac{3}{16}$	.008	.008	220.0	44.2	RS							5
6	60	RB	Sag	21.3	Tra	2	N	24.2	$1/2$N to $1/2$P	$\frac{3}{8}$N to $\frac{3}{8}$P	$\frac{1}{32}$N to $\frac{3}{32}$N	5 51′ at 0	Ben	H	Mo	Mo	Com	12	$24\frac{1}{2}$	$2\frac{1}{2}$	$\frac{3}{16}$	.008	.008	220.0	44.2	RS							6
7	75	RB	Sag	23.6					$1/2$N to $1/2$P	$\frac{3}{8}$N to $\frac{3}{8}$P	$\frac{1}{32}$N to $\frac{3}{32}$N	5 51′ at 0	Ben	H	Mo	Mo	Com	12	$24\frac{1}{2}$	$2\frac{1}{4}$	$\frac{3}{16}$	.008	.008	230.0	44.2	RS							7
8	Chevrolet GJ-GK	WR	Sag	17.4	Lg	2	Y		30 ± 30′	30′ ± 30′	0 to $\frac{1}{8}$	4 ± 30′	Own	H	Mo	Mo	(e)	11	$20\frac{1}{8}$	$1\frac{3}{4}$	$\frac{3}{16}$	(f)	(f)	149.0	42.3	RS							8
9	Chrysler C-45	WR		18.2	Lg	2	Y		1 to +1	−1 to −3	0 to $\frac{1}{16}$	$4\frac{3}{4}$ to 6	C-L	H	Mo	Mo	CI	11	(g)	2	$\frac{13}{64}$	.006	.006	173.5	40.0	PS	Ext	6	$15\frac{3}{8}$	2	$\frac{5}{32}$	.017	9
10	C-46	WR		20.4	Lg	2	Y		1 to +1	−1 to −3	0 to $\frac{1}{16}$	$4\frac{3}{4}$ to 6		H	MWA	MWA	Cen	12	(h)	2	$\frac{13}{64}$	.006	.006	189.2	40.0	PS	Ext	7	20	$2\frac{1}{2}$	$\frac{5}{32}$	.017	10
11	C-47	WR		20.4	Lg	2	Y		1 to +1	−1 to −3	0 to $\frac{1}{16}$	$4\frac{3}{4}$ to 6		H†	MWA	MWA	Cen	12	(h)	2	$\frac{13}{64}$	.006	.006	189.2	40.0	PS	Ext	7	20	$2\frac{1}{2}$	$\frac{5}{32}$	.017	11
12	Crosley CD	CL	Ross	17.5	Lg	1	N	15.0	$7\frac{1}{2}$°	2°	$\frac{3}{64}$ to $\frac{1}{16}$	$6\frac{1}{2}$°	C-DW	M	Mo	Mo	CI	6	14	$\frac{31}{32}$	$\frac{3}{16}$	.007	.007	56.0	60.0	All	Int	6	14	$\frac{31}{64}$	$\frac{3}{16}$	.007	12
13	De Soto S-13	WR		18.2	Lg	1	Y		1 to +1	0 to $+\frac{3}{4}$	0 to $\frac{1}{16}$	$4\frac{3}{4}$ to 6		H	Mo	Mo		11	(g)	2	$\frac{13}{64}$	.006	.006	173.5	40.0	PS	Ext	6	$15\frac{3}{8}$	2	$\frac{5}{32}$	.017	13
14	Dodge D29-30	WR		18.2	No	2	N		1 to +1	0 to $\frac{3}{4}$	0 to $\frac{1}{16}$	$4\frac{3}{4}$ to 6	C-L	H		Mo		11	(g)	2	$\frac{13}{64}$	.006	.006	173.5	40.0	PS	Ext	6	$15\frac{3}{8}$	2	$\frac{5}{32}$	.017	14
15	Ford 6-9EHA	WR	Own	17.7	Tra	2	N	20.5	$+\frac{1}{4}$ to $\frac{3}{4}$	$-\frac{1}{4}$ to $\frac{3}{4}$	$\frac{1}{16}$ to $\frac{1}{8}$	$5\frac{1}{2}$		H	Mo	Mo	CI	10	21.8	(i)	$\frac{3}{16}$	.010	.010	176.0	38.0	RS							15
16	V8-9EBA	WR	Own	17.7	Tra	2	N		$+\frac{1}{4}$ to $\frac{3}{4}$	$-\frac{1}{4}$ to $\frac{3}{4}$	$\frac{1}{16}$ to $\frac{1}{8}$	$5\frac{1}{2}$		H	Mo	Mo	CI	10	21.8	$2\frac{1}{4}$	$\frac{3}{16}$	.010	.010	176.0	38.0	RS							16
17	Frazer 495-496	WR	Own	18.2	Tra	2	Y	20.0	1 to 1	0 to $-\frac{3}{4}$	0 to $\frac{1}{16}$	$4\frac{3}{4}$ to $5\frac{3}{4}$	Ben	H	Mo	Mo	Cen	11	22	2	$\frac{13}{64}$	.010		152.0	44.5	RS							17
18	Hudson 6, 491-492	WR	Gem	20.4	Lg	2	Y	$21\frac{1}{16}$	0 to $+\frac{1}{4}$	$\frac{1}{2}$° to $\pm\frac{1}{4}$°	$\frac{1}{32}$ to $\pm\frac{1}{32}$	3° 36′	Ben	D	Mo	Mo	Cen	11	*	(j)	.177	.010	.010	158.7		RS							18
19	8, 493-494	WR	Gem	20.4	Lg	2	Y	$21\frac{1}{16}$	0 to $+\frac{1}{4}$	$\frac{1}{2}$° to $\pm\frac{1}{4}$°	$\frac{1}{32}$ to $\pm\frac{1}{32}$	3° 36′	Ben	B	Mo	Mo	Cen	11	*	(j)	.177	.010	.010	158.7		RS							19
20	Kaiser 491-492	WR	Own	18.2	Tra	2	Y	20.0	1 to 1	0 to $-\frac{3}{4}$	0 to $\frac{1}{16}$	$4\frac{3}{4}$ to $5\frac{3}{4}$	Ben	H	Mo	Mo	Cen	11	22	2	$\frac{13}{64}$	.010		152.0	44.5	RS							20
21	Lincoln 9EL-9EH	WR	Gem	20.4	Tra	2	Y	22.5	0 to $\pm\frac{1}{2}$	0 to $+\frac{3}{4}$	$\frac{3}{32}$ to $\frac{5}{32}$	5	Ben	H	Mo	Mo	CI	12	25.9	(k)	.212			219.8	41.0	RS							21
22	Mercury 9CM	WR	Gem	18.2	Tra	2	Y	$21\frac{5}{8}$	$-\frac{1}{2}$ to $+\frac{1}{2}$	0 to $+\frac{3}{4}$	$\frac{3}{32}$ to $\frac{5}{32}$	5	Ben	H	Mo	Mo	Com	11	23.9	2	.212	.010	.010	179.0	44.0	RS							22
23	Nash 600-4940	WR	Gem	18.2	Tra	2	Y	$20\frac{1}{8}$	0 to $+\frac{1}{2}$	$-\frac{1}{4}$ to $+\frac{1}{4}$	$\frac{1}{16}$ to $\frac{3}{16}$	$8\frac{1}{2}$°	Ben	H	Mo	Mo	CI	9	17.5	(r)	$\frac{3}{16}$	.015	.015	132.0	43.4	RS							23
24	Ambassador-4960	WR	Gem	12.2	Tra	2	Y	$21\frac{1}{8}$	0 to $+\frac{1}{2}$	$-\frac{1}{4}$ to $+\frac{1}{4}$	$\frac{1}{16}$ to $\frac{3}{16}$	$8\frac{1}{2}$°	Ben	H	Mo	Mo	CI	10	22.0	2	$\frac{3}{16}$	.015	.015	176.0	47.0	RS							24
25	Oldsmobile Futuramic-76	WR	Sag	19.0	Tra	2	N	20.0	0 to $-\frac{3}{4}$	$-\frac{1}{4}$ to $+\frac{1}{4}$	$\frac{1}{16}$ to $\frac{1}{8}$	4 29′47″	Var	H	Mo	Mo	CI	11	$21\frac{5}{16}$	(r)	.226	.015	.015	159.8	44.0	RS							25
26	Futuramic-88	WR	Sag	19.0	Tra	2	N	20.0	0 to $-\frac{3}{4}$	$-\frac{1}{4}$ to $+\frac{1}{4}$	$\frac{1}{16}$ to $\frac{1}{8}$	4 29′47″	Var	H	Mo	Mo	CI	11	$21\frac{5}{16}$	(t)	.226	.015	.015	191.7	42.0	RS							26
27	Futuramic-98	WR	Sag	19.0	Tra	2	N	21.0	0 to $-\frac{3}{4}$	$-\frac{1}{4}$ to $+\frac{1}{4}$	$\frac{1}{16}$ to $\frac{1}{8}$	4 29′47″	Var	H	Mo	Mo	CI	11	$21\frac{5}{16}$	(t)	.226	.015	.015	191.7	44.0	RS							27
28	Packard 8, 2201-2211	WR	P-G	26.2				22.0	0 to $+\frac{1}{4}$	−1 to $+\frac{1}{2}$	0 − $\frac{1}{16}$ − 0	5 50″		H			Cen	12	$24\frac{1}{2}$	$1\frac{3}{4}$	$\frac{3}{16}$			171.5		RS							28
29	Super 8, 2202-22-32	WR	P-G	26.2				22.0	0 to $+\frac{1}{4}$	−1 to $+\frac{1}{2}$	0 − $\frac{1}{16}$ − 0	5 50″		H			Cen	12	$24\frac{1}{2}$	$1\frac{3}{4}$	$\frac{3}{16}$			171.5		RS							29
30	Cust 8, 2206-26-33	WR	P-G	26.2				22.0	0 to $+\frac{1}{4}$	−2 to $+\frac{1}{2}$	0 − $\frac{1}{16}$ − 0	5 50″		H			Cen	12	$24\frac{1}{2}$	(s)	$\frac{3}{16}$			208.2		RS							30
31	Plymouth P17-18	WR		18.2	No	2	N		−1 to +1	0 to $+\frac{3}{4}$	0 to $\frac{1}{16}$	$4\frac{3}{4}$ to 6	C-L	H	Mo	Mo		10	(n)	2	$\frac{13}{64}$	.606	.006	158.0	40.0	PS	Ext	6	$15\frac{3}{8}$	2	$\frac{5}{32}$	.017	31
32	Pontiac 6-25	WR	Sag	19.0	Tra	2	Y	19.58	$-\frac{3}{4}$ to 1	0	0 to $\frac{1}{16}$	5	Ben	H	Mo	Mo	CIS	11	$21\frac{5}{16}$	(j)	$\frac{3}{16}$			173.0	44.0	RS							32
33	8-27	WR	Sag	19.0	Tra	2	Y	19.58	$-\frac{3}{4}$ to −1	0	0 to $\frac{1}{16}$	5	Ben	H	Mo	Mo	CIS	11	$21\frac{5}{16}$	(j)	$\frac{3}{16}$			173.0	44.0	RS							33
34	Studebaker 8G	CL	Ross	14.0	No	3	Y	21′8″	$+1\frac{1}{2}$	$\frac{1}{2}$° to $+\frac{1}{4}$°	$\frac{1}{16}$ to $\frac{1}{8}$	$5\frac{1}{2}$°	WE	H	Mo	Mo	Com	9	$18\frac{1}{2}$	2	$\frac{3}{16}$	SC	SC	178.0	43.0	RS							34
35	16A	CL	Ross	17.0	Lg	3	Y	20′8″	−2 to −3	$\frac{1}{2}$° to $+\frac{1}{4}$°	$\frac{1}{16}$ to $\frac{1}{8}$	$5\frac{1}{2}$°	WE	H	Mo	Mo	Com	11	$22\frac{1}{4}$	2	$\frac{3}{16}$	SC	SC	178.0	43.0	RS							35
36	Willys Jeepster VJ-2	CL	Ross	14.0	Tra	2	N	17.5	1°	1°	$\frac{1}{16}$ to $\frac{1}{8}$	$5\frac{1}{2}$°	Ben	H	Mo	Mo	CN	9.9	19	1.76	.222			133.7	43.0	RS							36
37	4-63	CL	Ross	14.0	Tra	2	N	17.5	1°	1°	$\frac{1}{16}$ to $\frac{1}{8}$	$5\frac{1}{2}$°	Ben	H	Mo	Mo	CN	9.9	19	1.76	.222			133.7		RS							37
38	6-63	CL	Ross	14.0	Tra	2	N	17.5	1°	1°	$\frac{1}{16}$ to $\frac{1}{8}$	$5\frac{1}{2}$°	Ben	H	Mo	Mo	CN	9.9	19	1.76	.222			133.7		RS							38

ABBREVIATIONS

*—At $\frac{5}{8}$° Camber.
•—Rear $2\frac{1}{2}$ in.
†—Front 21.32 in., Rear 20.87 in.
^—Model 9EH turning radius is $23\frac{1}{4}$ ft.
e—Cast iron rim with steel web.
f—Adjust to slight drag, back off 4 notches.
g—Front 23 in., Rear $20\frac{5}{8}$ in.
h—Front $25\frac{1}{4}$ in., Rear $22\frac{5}{8}$ in.
i—Front $21\frac{1}{4}$ in., Rear $13\frac{1}{4}$ in.
k—Front $21\frac{1}{4}$ in., Rear 2 in.
n—Front 21 in., Rear $18\frac{1}{2}$ in.
r—Forward Shoe 2 in., Reverse $13\frac{1}{4}$ in.
s—Primary $21\frac{1}{4}$ in., Secondary 2 in.
t—Front $21\frac{1}{2}$ in., Rear 2 in.
B-D—Bendix or Delco.
Ben—Bendix Products Div.
BW—Ball bearing, worm and nut.
C-DW—Crosley-Dyna-Wedge.
Cen—Centrifuse.
CI—Cast Iron.
CIS—Cast Iron and Steel.
CL—Cam and Lever.
C-L—Chrysler and Lockheed.
CN—Chrome-Nickel.
Com—Composite.
D—Duo Automatic.
Ext—External contracting.
Gem—Gemmer Mfg. Co.
H—Hydraulic.
Lg—Longitudinal.
M—Mechanical.
Mo—Moulded.
MWA—Moulded woven asbestos.
N—Negative.
NO—No or None. P—Positive.
P-G—Packard-Gemmer Mfg. Co.
Ross—Ross Gear and Tool Co.
PS—Propeller Shaft, rear of transmission.
RB—Recirculating ball.
RS—Rear service brakes.
Sag—Saginaw Steering Gear Div.
SC—Self Centering.
Tra—Transverse. Var—Various.
WE—Wagner Electric Corp.
WR—Worm and Roller. Y—Yes.

For page on which Directory of Manufacturers appears, see Table of Contents page 65

1949 PASSENGER CARS

REAR AXLES, TIRES AND FRAMES

Line No.	PASSENGER CAR MAKE AND MODEL	REAR AXLE: Make	Type	Min. Road Clearance (In.)	LUBRICATION: Capacity Pts.	Grade: Summer	Grade: Winter	GEARING: Type	Ratios: Standard	Ratios: Optional	No. of Teeth: Ring	No. of Teeth: Pinion	Pinion Adjustment	Pinion Bearing Adjustment	Pinion Bearing in Sleeve	Back Lash Average In.	TIRES: Make	Size	Number of Plies	Inflation Pressure (psi.) Cold: Front	Inflation Pressure (psi.) Cold: Rear	RIM: Diameter (In.)	RIM: Width (In.)	FRAME DIMENSIONS (In.): Depth (Maximum)	Thickness (Maximum)	Flange Width (Maximum)	Line Number
1	Buick — Special 40	Own	SF	$72\frac{7}{32}$	4	90 Hyp*	90 Hyp*	Hyp	4.45	4.10	49	11	Shim	No	No	.008	U.S., Fire, Go	6.50 16	4	26	26	16	6.00	$6\frac{1}{8}$	$\frac{7}{64}$	$2\frac{1}{8}$	1
2	Super 50	Own	SF	$72\frac{1}{4}$	4	90 Hyp*	90 Hyp*	Hyp	4.45	4.10	49	11	Shim	No	No	.008	U.S., Fire, Go	7.60 15	4	24	24	15	6.50	$6\frac{1}{8}$	$\frac{7}{64}$	$2\frac{1}{8}$	2
3	Roadmaster 70	Own	SF	$91\frac{1}{4}$	4	90 Hyp*	90 Hyp*	Hyp	4.10		41	10	Shim	No	No	.008	U.S., Fire, Go	8.20 15	4	22	22	15	6.50	$6\frac{3}{16}$	$\frac{5}{32}$	$2\frac{1}{4}$	3
4	Cadillac — 61	Own	SF	8	5	90 Hyp*	90 Hyp*	Hyp	3.77	3.36	49	13	No	No	No	.007	U.S., Fire, Go	8.20 15	4	24	24	15	6.00	$6\frac{1}{8}$	$\frac{9}{64}$	2	4
5	62	Own	SF	8	5	90 Hyp*	90 Hyp*	Hyp	3.77	3.36	49	13	No	No	No	.007	U.S., Fire, Go	8.20 15	4	24	24	15	6.00	$6\frac{1}{8}$	$\frac{9}{64}$	2	5
6	60	Own	SF	8	5	90 Hyp*	90 Hyp*	Hyp	3.77	3.36	49	13	No	No	No	.007	U.S., Fire, Go	8.20 15	4	24	24	15	6.00	$6\frac{1}{8}$	$\frac{5}{32}$	2	6
7	75	Own	SF	9	5	90 Hyp*	90 Hyp*	Hyp	4.27	3.77	47	11	No	No	No	.007	U.S., Fire, Go	7.50 16	6	24	32	16	5.00	$7\frac{1}{8}$	$\frac{5}{32}$	$2\frac{1}{4}$	7
8	Chevrolet — GJ-GK	Own	SF	$81\frac{1}{16}$	$3\frac{1}{2}$	90 Hyp	90 Hyp	Hyp	4.11	3.73	37	9	Shim	No	No	.007	U.S., Fire, Go	6.70 15	4	24	24	15	5.00	$4\frac{25}{64}$	$\frac{3}{32}$	$3\frac{7}{8}$	8
9	Chrysler — C-45		SF	9	$3\frac{1}{4}$	90 Hyp	90 Hyp	Hyp	3.90		39	10	Shim	Shim	No	.008		7.60 15	4	24	24	15	6.00	6	$\frac{3}{32}$	$2\frac{1}{16}$	9
10	C-46		SF	9	$3\frac{1}{2}$	90 Hyp	90 Hyp	Hyp	3.91		43	11	Shim	Shim	No	.008	Gy	8.20 15	4	24	24	15	6.00	$6\frac{1}{2}$	$\frac{1}{8}$	$2\frac{1}{16}$	10
11	C-47		SF	$97\frac{1}{16}$	5	90 Hyp	90 Hyp	Hyp	3.58		43	12	Shim	Shim	No	.008	Gy	8.90 15	6	24	24	15	6.50	$6\frac{9}{16}$	$\frac{5}{32}$	$2\frac{3}{32}$	11
12	Crosley — CD	Spi	SF	$61\frac{2}{2}$	$1\frac{1}{2}$	90	90	SB	5.17		31	6	Shim	Shim	No	.006	Fire, Gy	4.50 12	4	25	25	12	2.50	3	$\frac{1}{8}$	$1\frac{1}{4}$†	12
13	De Soto — S-13		SF	9	$3\frac{1}{4}$	90 Hyp	90 Hyp	Hyp	3.73	3.90†	39	10	Shim	Shim	No	.008	Gy	7.60 15	4	24	24	15	5.50	6	$\frac{3}{32}$	$2\frac{1}{16}$	13
14	Dodge — D-29		SF	$83\frac{5}{8}$	$3\frac{1}{4}$	90	90	Hyp	3.90		39	10	Shim	Shim	No	.008	Gy	6.70 15	4	24	24	15	5.00	6	$\frac{3}{32}$		14
15	D-30		SF	$85\frac{5}{8}$	$3\frac{1}{4}$	90	90	Hyp	4.10	3.90†	41	10	Shim	Shim	No	.008	Gy	7.10 15	4	24	24	15	5.00	6	$\frac{3}{32}$		15
16	Ford — 6-98HA	Own	SF	8.2	3	90	90	Hyp	3.73	4.10†	41	11•	No	Cs	No	.006	Various	6.00 16	4	28	25	16	4.50	4	.09	$3\frac{3}{64}$	16
17	V8-98BA	Own	SF	8.2	3	90	90	Hyp	3.73	4.10†	41	11•	No	Cs	No	.006	Various	6.00 16	4	28	25	15	4.50	4	.09	$3\frac{3}{64}$	17
18	Frazer — 495-496	Spi	SF	$71\frac{3}{16}$	3	90	90	Hyp	4.09	4.27†	47	11	Shim	Shim	No	.004	Gy	7.10 15	4	24	24	15	5.00	$6\frac{1}{8}$	$\frac{1}{8}$	+	18
19	Hudson — 6, 491-492	Own	SF	$81\frac{1}{8}$	$3\frac{5}{8}$	Hyp	Hyp	Hyp	4.10	4.55†	41	10	Shim	Shim	No	.005	Gy	7.10 15	4	28	24	15	5.00				19
20	8, 493-494	Own	SF	$81\frac{5}{8}$	$3\frac{5}{8}$	Hyp	Hyp	Hyp	4.10	4.55†	41	10	Shim	Shim	No	.005	Gy	7.10 15	4	24	24	15	5.00				20
21	Kaiser — 491-492	Spi	SF	$71\frac{3}{16}$	3	90	90	Hyp	4.09	4.27†	45	11	Shim	Shim	No	.004	Gy	7.10 15	4	24	24	15	5.00	$6\frac{1}{8}$	$\frac{1}{8}$	+	21
22	Lincoln — 9EL-9EH	Spi	SF	$81\frac{1}{4}$	4	90	90	Hyp	3.91	4.27†	43	11	Shim	Shim	No	.005	Fire, Go, Gy	8.20 15	4	24	24	15	6.00	$5\frac{1}{2}$	.105	2	22
23	Mercury — 9CM	Spi	SF	7.8	3	90	90	Hyp	3.91	4.27†	43	11	Shim	Shim	No	.005	Fire, Go, Gy	7.10 15	4	24	24	15	5.50	$5\frac{1}{2}$	.105	2	23
24	Nash — 600-4940	Own	SF	$72\frac{3}{4}$	3	90 Hyp	80 Hyp	Hyp	4.40	4.90†	35	8	Shim	Shim	No	.005	Gy	6.40 15	4	24	24	15	4.50	Int			24
25	Ambassador 4960	Own	SF	8	4	90 Hyp	80 Hyp	Hyp	4.10	4.44†	41	10	Shim	Shim	No	.005	Gy	7.10 15	4	24	24	15	5.00	Int			25
26	Oldsmobile — Futuramic 76	Own	SF	$81\frac{1}{8}$	$3\frac{3}{4}$			Hyp	4.10	4.30	41	10	Shim	Nut	No	.005	Various	7.10 15	4	24	24	15	5.50	$6\frac{3}{16}$	.120	$2\frac{1}{4}$	26
27	Futuramic 88	Own	SF		$3\frac{3}{4}$			Hyp	3.23	No	42	13	Shim	Nut	No	.005	Various	7.60 15	4	24	24	15	5.50	$6\frac{3}{16}$	.120	$2\frac{1}{4}$	27
28	Futuramic 98	Own	SF		$3\frac{3}{4}$			Hyp	3.63	No	40	11	Shim	Nut	No	.005	Various	7.60 15	4	24	24	15	5.50	$5\frac{1}{8}$	.135	$2\frac{3}{4}$	28
29	Packard — 8, 2201-2211	Own	SF		4			Hyp	3.90	4.10†	39	10						6.50 16	4	28	28	16			.125		29
30	Super 8, 2202-22-32	Own	SF		4			Hyp	3.90	4.10†	39	10						7.00 15	4	26	26	15			.125		30
31	Cust. 8, 2206-26-33	Own	SF		6			Hyp	3.92	4.09†	47	12						7.00 15	4	28	28	15			.140		31
32	Plymouth — P-17		SF	$71\frac{5}{16}$	$3\frac{1}{4}$	90	90	Hyp	3.90		39	10	Shim	Shim	No	.008	Gy	6.40 15	4	24	24	15	4.50	6	$\frac{3}{32}$		32
33	P-18		SF	$83\frac{5}{8}$	$3\frac{1}{4}$	90	90	Hyp	3.90		39	10	Shim	Shim	No	.008	Gy	6.70 15	4	24	24	15	4.50	6	$\frac{3}{32}$		33
34	Pontiac — 6-25	Own	SF	$77\frac{1}{16}$	$3\frac{1}{4}$	90	90	Hyp	4.10	3.63†	41	10	Shim	No	Yes	.007	Optional	7.10 15	4	24	24	15	5.50	$6\frac{5}{16}$	$\frac{7}{64}$	$2\frac{1}{8}$	34
35	8-27	Own	SF	$77\frac{1}{16}$	$3\frac{1}{4}$	90	90	Hyp	4.10	3.63†	41	10	Shim	No	Yes	.007	Optional	7.10 15	4	24	24	15	5.50	$6\frac{5}{16}$	$\frac{7}{64}$	$2\frac{1}{8}$	35
36	Studebaker — 8G	Spi	SF	$71\frac{1}{2}$	$2\frac{1}{2}$	90	90	Hyp	4.10	4.56†	41	10	Shim	Shim	No	.004	Fire, Go	5.50 15	4	30	28	15	5.00	$3\frac{25}{32}$	$\frac{5}{64}$	4+	36
37	16A	Spi	SF	$71\frac{1}{2}$	3	90	90	Hyp	4.09	4.55†	45	11	Shim	Shim	No	.004	Fire, Go	6.50 15	4	26	22	15	6.00	$4\frac{9}{16}$	$\frac{1}{8}$	4+	37
38	Willys — Jeepster VJ-2	Spi	SF		2	90	90	Hyp	4.88	5.13	39	8	Shim	Shim	No	.006	Gy	5.90 15	4	20	30	15		5	.063	$3\frac{3}{4}$	38
39	4-63	Spi	SF	$81\frac{1}{4}$	2	90	90	Hyp	4.88	5.13	39	8	Shim	Shim	No	.006	Gy	6.00 15	4	20	30	15		5	.060	$3\frac{3}{4}$	39
40	6-63	Spi	SF		2	90	90	Hyp	5.38	5.13	39	8	Shim	Shim	No	.006	Gy	6.00 15	4	20	30	15	4.00	5	.060	$3\frac{3}{4}$	40

ABBREVIATIONS

•—Seasonal changes are not recommended.
†—At extra cost.
•—Ten teeth in Pinion with 4.10 gear ratio.
+—Box type.
Cs—Collapsible spacer.
Fire—Firestone Tire and Rubber Co.
Go—B. F. Goodrich Co.
Gy—Goodyear Tire Co.
Hyp—Hypoid.
Int—Integral with body.
No—No or None.
SB—Spiral bevel.
SF—Semi-floating.
Spi—Spicer.
US—United States Rubber Co.

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TRUCK SPECIFICATIONS TABLE

OF CURRENT PRODUCTION MODELS

DATA SUPPLIED BY MANUFACTURERS AND TABULATED BY

AUTOMOTIVE INDUSTRIES

Key to Definitions, References and Abbreviations

DEFINITIONS

MAKE AND MODEL

Only Domestic Truck Models are listed.

OPTIONAL UNITS

For the express purpose of best fitting the truck to the individual job most of the models listed can be provided with optional engines, transmissions, axles, etc., and these models when so equipped are considered standard stock models.

CHASSIS LIST PRICE

The chassis list price applies to the minimum standard wheelbase with standard tires and standard equipment. All prices are F.O.B. factory. Chassis list price does not include the price of the Cab unless otherwise noted.

RECOMMENDED GROSS VEHICLE WEIGHT FOR NORMAL SERVICE

The Gross Weights published herewith are those supplied by manufacturers as their Recommended Gross Vehicle Weights for Normal Operating Conditions, and are based upon the Maximum Authorized Tire Size listed. In actual practice the manufacturer may either increase or decrease the gross vehicle weight rating when either favorable or unfavorable operating conditions are involved. Since the proper performance of a motor truck depends upon many factors, including grades, road conditions, etc., the gross weights that a manufacturer is prepared to recommend will vary with particular conditions, and the manufacturer's own standard of safety factors. Specific recommendations, therefore, should be obtained from the manufacturer's representative.

CHASSIS WEIGHT

The chassis weight listed includes the weight of the minimum standard wheelbase chassis, with cowl, with standard tires, with standard equipment, with crankcase and cooling system full, and 5 gallons of fuel in the tank. It does not include the weight of the Cab. This applies to C.O.E. as well as conventional chassis types. Exceptions are noted.

STANDARD TIRE SIZE

The standard tire size listed is that which is included in the Chassis List Price.

MAXIMUM AUTHORIZED TIRE SIZE

The tire size listed in this column is the maximum size recommended by the manufacturer of the chassis for the Gross Vehicle Weight for Normal Operating Conditions. It is furnished at extra cost, if it differs from the standard size. Dual rears are understood; exceptions noted.

MINIMUM STANDARD WHEELBASE

The minimum standard wheelbase is the so-called standard wheelbase on which the Chassis List Price is based.

MAXIMUM STANDARD WHEELBASE

The maximum standard wheelbase is the extreme end of the standard range of wheelbases offered by the chassis maker.

MAXIMUM BRAKE HP.

Maximum Brake Horsepower at Given R.P.M. is actual dynamometer reading without accessories.

GEAR RATIO RANGE

Gear Ratio Range in High Ratios within the range given are available at no extra cost. Exceptions are noted.

TRACTORS

Unless given the designation (N)—meaning not available as a tractor—all standard models may be assumed to be available as tractors. Exclusively Tractor models are designated (T).

KEY TO REFERENCES

c.f.—Cab Forward design.
c.o.e.—Cab-Over-Engine design.
(D)—Diesel-engine equipped.
(T)—Designed for tractor use only.
(C)—Converted Ford or Chevrolet Model.

(2) International Harvester Specifications shown represent only the basic standard chassis units and standard chassis ratings in keeping with definitions established by Commercial Car Journal. Optional units not shown such as engines, clutches, transmissions, axles or axle ratios, brakes, wheels and tires, frames or frame reinforcements, optional wheelbases or any other units which make up part of the truck chassis and which International will furnish and approve from the factory as optional equipment can or will change either the ratings, chassis weight shown or performance of the truck as indicated by this list.

Also the company reserves the privileges of assigning special gross vehicle ratings for any chassis providing in the opinion of its engineering department, the type of service justifies the new rating without decreasing the safety factor designed into the truck.

(a) Available with Two-Speed Axle designated KB8 Models.

KEY TO ABBREVIATIONS

MAKES—ALL

B—Bendix.
BL—Brown-Lipe.
Bu or Bud—Buda.
BW—Bendix-Westinghouse.
C—Chevrolet.
Cl or Cla—Clark.
Con—Continental.
Cum—Cummins-Diesel.
Eat—Eaton.
F—Ford.
Fu—Fuller.
H—Hotchkiss.
Her—Hercules.
HS—Hall-Scott.
L—Lockheed.
LH—Lockheed front, Wagner "hi-lock" rear.
LW—Lockheed front, Wisconsin rear.
M—Midland.
N.P.—New Process.
O or Ow—Owen.
Op or Opt—Optional.
Shu—Shuler.
Spi—Spicer.
T or Tim—Timken-Detroit Axle Co.
Tw—Timken-Detroit—Westinghouse.
TW—Timken-Detroit—Wisconsin.
WG—Warner Gear.
Wau—Waukesha.
W or Wis—Wisconsin.
Wg—Wagner.
Ws—Westinghouse.
WW—Westinghouse or Wagner.

WHEELS DRIVEN

2F—Forward unit of Rear Axle Group.
2R—Rear Unit of Rear Axle Group.
4R—Forward and rear units of Rear Axle Group.
All wheels.

BRAKES—SERVICE

Location

4—Four Wheels, front and rear.
4r—Four Wheels, rear only.

Type

I—Internal.
X—External.

Operation

A—Air.
H—Hydraulic.
V—Vacuum.
D or Dp—Dual Primary.

BRAKES—HAND

Location

C—Center of double propeller shaft.
2—Rear wheels.
4—Four wheels.
6—Six wheels.
P—Back of Power Divider.
J—Jackshaft.
T—Transmission.
F—Driveshaft.

Type

D—Tru-Stop disk.
I—Internal.
M—Mechanical.
X—External.
PD—Two drums on rear of power divider.

BRAKE DRUMS

Material

a—Cast alloy iron.
A—American Car Foundry.
c—Cast iron.
Cc—Composite Front, Cast Iron in rear.
Ce—Centrifuse.
Cl—Copper iron.
Co—Composite.
D—Dayton.
E—Ermalife.
G—Gunite.
N—Nickel iron.
S—Steel.

(Where a combination of any of the above is used, the first reference mark applies to the front and the second to the rear drums.)

FRAME

Type

C—Channel.
T—Channel tapered front and rear.
I—Channel reinforced with liner.
B—Channel reinforced with both liner and fishplate.
P—Channel reinforced with plate.
TL—Channel tapered front and rear reinforced with liner.
D—Drop Center.
Tf—Tapered front.
A—Straight section sidemembers, lined with oak inserts.
Z—Reinforced (X) member frame, box type sections.

REAR AXLE

Final Drive and Type

B—Bevel.
CD—Chain Drive.
F—Full-floating.
H or Hy—Hypoid.
d—Dual range axle.
2—Double Reduction.
S—Spiral bevel.
W—Worm.
¾—Three-Quarters Floating.
½—Semi-Floating.
T—Torque Tube.

GEAR RATIOS

(**) Only one ratio.

Drive and Torque

H—Hotchkiss (springs).
R—Radius Rods.
L—Parallel Torque Rods.
T—Torque Arm.

GOVERNOR STANDARD

Y—Yes.
N—No.

CURRENT TRUCK SPECIFICATIONS

Line Number	MAKE AND MODEL	Chassis List Price	WHEEL BASE: Minimum Standard	WHEEL BASE: Maximum Standard	TIRE SIZES (D-dual rear, S-single rear): Gross Vehicle Weight for Normal Service	Chassis Weight See definition	Standard Front and Rear	Maximum Authorized Tire Size (Dual unless noted)	ENGINE DETAILS: Make and Model	No. of Cylinders, Bore and Stroke	Displacement	Comp. Ratio	Torque lb. ft.	Max. Brake H.P. Net H.P. M. Given	Main Bearings: Number	Main Bearings: Diameter and Length	Governor Standard	TRANSMISSION: Make and Model	REAR AXLE: Forward Speeds	REAR AXLE: Make and Model	REAR AXLE: Gear and Type	REAR AXLE: Drive & Torque	REAR AXLE: Gear Ratio Range in High	FRONT AXLE: Make and Model	BRAKES SERVICE: Make	BRAKES SERVICE: Location	BRAKES SERVICE: Type Operation	BRAKES SERVICE: Lining Area	BRAKES SERVICE: Drum Diam.	BRAKES SERVICE: Drum Material	BRAKES SERVICE: Hand Location	BRAKES SERVICE: Hand Type	CA Dimensions Min. Std. W. B.	FRAME: Side Rail Dimensions	FRAME: Type
	Available																																		
1	(C.O.E.)	200			15000	5500	*7.00-20D	8.25-20	Wau BM	6-3¾x4¼	263.5	9.17:1	78-258	87.2	7	2-2¼x10¼	N	WG-T9	4	Tim E1001PH	HF	H	** -6	20	Tim 32502H	14HV		314	534	a	TX			10x3⅜	¼	T
2	(C.O.E.)	225			16500	6200	*7.50-20D	8.25-20	Wau BZ	6-4x4¼	320.5	9.2:1	105-320	97.2	7	2-2¼x10¼	N	WG-T97	4	Tim E1001PH	HF	H	** -6	20	Tim 32502H	14HV		314	534	a	TX			10x3⅜	¼	T
3	(C.O.E.)	400			23000	6800	*9.00-20D	10.00-20	Wau BZ	6-4x4¼	320.5	9.2:1	105-320	97.2	7	2-2¼x10¼	Y	Fu 5A330	5	Tim H1001PH	HF	H	** -6	83	Tim 35001H	14HV		344	584	a	TX			10x3⅜	¼	T
4	(C.O.E.)	500			23000	7500	9.00-20D	10.00-20	Wau BZ	6-4¼x4¼	361.5	8.2:1	130-360	108.2	7	2-2¼x12½	Y	Fu 5A330	5	Tim L1001PH	HF	H	** -6	83	Tim 35001H	14HV		370	642	a	TX			12x3⅜	¼	T
5	(C.O.E.)	550			28000	8100	10.00-20D	11.00-20	Wau MZA	6-4¼x4¼	404.5	8.2:1	130-360	108.2	7	2-2¼x12½	Y	Fu 5A430	5	Tim Q1001PH	HF	R	** -7	80	Tim 26452H	14HV		458	846	a	TX			12x3⅜	¼	T
6	(C.O.E.)	550 N			32000	9600	10.00-20D	11.00-24	Wau MZA	6-4¼x4¼	404.5	8.2:1	130-360	108.2	7	2-2¼x12½	Y	Fu 5A430	5	Tim S2001PH	2F	R	** -7	84	Tim 26452H	14HV		576	1054	a	FE			14x3⅜	¼	T
7	(C.O.E.)	600			28000	10000	10.00-20D	11.00-24	Wau 140 GK	6-4¼x5½	525.6	4.42:1	172-500	129.2	7	2-2¼x13½	Y	Fu 5A650	4	Tim R100P	HF	R	** -7	40	Tim 26452TW	14IA		566	950	a	FD			14x3⅜	¼	T
8	(C.O.E.)	601			28000	10900	10.00-20D	11.00-24	Wau 145 GK	6-5¼x6	777.6	2.595:240	240-672	184.2	7	3¼x17¾	Y	Spi 7851	4	Tim R100P	HF	R	** -7	40	Tim 26452TW	14IA		566	950	a	FD			14x3⅜	¼	T
9	(D) (C.O.E.)	602			28000	11200	*10.00-20D	11.00-24	Cum HB600	6-4¾x6	672.17	5.00:150	180-672	184.2	7	3¼x16½	Y	Spi 7851	4	Tim R100P	HF	R	** -7	40	Tim 26452TW	14IA		566	950	a	FD			14x3⅜	¼	T
11	Biederman	N8H	130	190	21000	6070	8.25-20D	10.00-20	Her JXLD	6-4x4½	339.6	9.27:1	131-320	97.2	7	2½x10¼	N	Fu 5A330	5	Tim H7001PH	SF	H	** -7	2	Tim	35000H	X	LH4IH		514	744	G	T	60	9x3⅜	¼	C
12		N8D	130	190	21000	6070	8.25-20D	10.00-20	Her JXLD	6-4x4½	339.6	9.27:1	131-320	97.2	7	2½x10¼	N	Fu 5A330	5	Tim H7001PH	2D	H	6 13-8	15	Tim	35000H	X	LH4IH		514	744	G	T	60	9x3⅜	¼	C
13	Chevrolet	GP	925	116		4600	*2500	6.00-16B	158										3	Own		Hy	T	** -4	11	Own		O4IH		164	242	Co	2I	39	5¼x2¼x⅝	C
14		GR	1020	125	♦	5800	*2935	158	O-Thrift Mas	6-3½x3¾	216.6	6.17:1	90-330	84.1	♦	♦	N	Own	3	Own		Hy	H	** -4	57	Own		O4IH		183	272	Co	2I	48¾	6¼x2¼x⅝	C
15	†Fwd. Control	GT	1035	125	♦	7000	2675	158	O-Thrift Mas	7.00-178							N	Own	3	Own		Hy	F	H	** -5	14	Own		O4IH		202	302	Co	2I		5½x2¼x⅝	C
16		G8	1090	137		8800	*3175	7.00-178		7.00-18							N	Own	3	Own		Hy	F	H	** -5	14	Own		O4IH		248	371	Co	2I	60	7x2¼x⅝	C
17	†Fwd. Control	GU	1125	137		10000	2880	7.00-178	O-Thrift Mas	7.00-18							N	Own	3	Own		Hy	F	H	** -5	14	Own		O4IH		248	371	Co	2I		7x2¼x⅝	C
18		SJ	1150	137		12500	*3620	7.00-20S	7.50-20	O-Thrift Mas	6-3½x3¾	216.6	6.17:1	90-330	84.1	♦	♦	N	Own	4	Own		Hy	H		6	17	Own		O4IH		330	474	Co	2I	60	7x2¼x⅝	C
19		SK	1185	161		12500	*3740	7.00-20S	7.50-20	O-Thrift Mas	6-3½x3¾	216.6	6.17:1	90-330	84.1	♦	♦	N	Own	4	Own		Hy	H		6	17	Own		O4IH		330	474	Co	2I	84	8¼x2¼x⅝	C
20	(School bus)	SL	1330	161		12000	*4120	6.50-20D	7.00-20	O-Thrift Mas	6-3½x3¾	216.6	6.17:1	90-330	84.1	♦	♦	N	Own	4	Own		Hy	H		6	17	Own		O4IH		330	474	Co	2I		8¼x2¼x⅝	C
21		SVS	1470	137		15000	*4230	7.50-20D	9.00-20	O-Load Mas	6-3⅞x3¾	235.6	7.19:1	93-310	84.1	♦	♦	Y	Own	4	Own		Hy	F	H		6	17	Own		O4IH		330	474	Co	2I	60	8¼x2¼x⅝	C
22		SWS	1505	161		15000	*4290	7.50-20D	9.00-20	O-Load Mas	6-3⅞x3¾	235.6	7.19:1	93-310	84.1	♦	♦	Y	Own	4	Own		Hy	F	H		6	17	Own		O4IH		330	474	Co	2I	84	8¼x2¼x⅝	C
23	(C.O.E.)	SPS	1825	110		15000	*4755	7.50-20D	9.00-20	O-Load Mas	6-3⅞x3¾	235.6	7.19:1	90-310	84.1	♦	♦	Y	Own	4	Own		Hy	F	H		6	17	Own		O4IH		330	474	Co	2I		8¼x2¼x⅝	C
24	(C.O.E.)	SRS	1860	134		15000	*4805	7.50-20D	9.00-20	O-Load Mas	6-3⅞x3¾	235.6	7.19:1	90-310	84.1	♦	♦	Y	Own	4	Own		Hy	F	H		6	17	Own		O4IH		330	474	Co	2I	60	8¼x2¼x⅝	C
25	(C.O.E.)	SSS	1895	158		15000	*4980	7.50-20D	9.00-20	O-Load Mas	6-3⅞x3¾	235.6	7.19:1	90-310	84.1	♦	♦	Y	Own	4	Own		Hy	F	H		6	17	Own		O4IH		330	474	Co	2I	84	8¼x2¼x⅝	C
26	(C.O.E.)	SP	1825	110		16000	*4755	7.50-20D	9.00-20	O-Load Mas	6-3⅞x3¾	235.6	7.19:1	90-310	84.1	♦	♦	Y	Own	4	Own		Hy	F	H		6	17	Own		O4IH		330	474	Co	2I	108¾	8¼x2¼x⅝	C
27	(C.O.E.)	SR	1860	134		16000	*4805	7.50-20D	9.00-20	O-Load Mas	6-3⅞x3¾	235.6	7.19:1	90-310	84.1	♦	♦	Y	Own	4	Own		Hy	F	H		6	17	Own		O4IH		330	474	Co	2I	60	8¼x2¼x⅝	C
28	(C.O.E.)	SS	1895	158		16000	*4980	7.50-20D	9.00-20	O-Load Mas	6-3⅞x3¾	235.6	7.19:1	90-310	84.1	♦	♦	Y	Own	4	Own		Hy	F	H		6	17	Own		O4IH		330	474	Co	2I	84	8¼x2¼x⅝	C
29		SV	1470	137		16000	*4230	7.50-20D	9.00-20	O-Load Mas	6-3⅞x3¾	235.6	7.19:1	93-310	84.1	♦	♦	Y	Own	4	Own		Hy	F	H		6	17	Own		O4IH		330	474	Co	2I	108¾	8¼x2¼x⅝	C
30		SW	1505	161		16000	*4290	7.50-20D	9.00-20	O-Load Mas	6-3⅞x3¾	235.6	7.19:1	93-310	84.1	♦	♦	Y	Own	4	Own		Hy	F	H		6	17	Own		O4IH		330	474	Co	2I	60	8¼x2¼x⅝	C
31	(School bus)	SX	1550	199		15000	*4715	7.50-20D	8.25-20	O-Load Mas	6-3⅞x3¾	235.6	7.19:1	93-310	84.1	♦	♦	Y	Own	4	Own		Hy	F	H		6	17	Own		O4IH		330	474	Co	2I	84	8¼x2¼x⅝	C
32	Corbitt■	18BG		181		18000		9.00-20	10.00-20	Con M6330	6-4x4¼	330.8	1.246:104	280-672	2½x12		Y	Cla 205V	5	Tim	H100DPH		H	** -5	29	Tim	32502H		B4IHV			a	TX			8¾x3¼x¾	T
33		22BG		190		22000		10.00-20	10.00-22	Con B6371	6-4½x4½	374.9	0.280:100	260-672	2½x13½		Y	Fu 5A43	5	Tim	Q100P		H	** -6	17	Tim	35100TW		W84IA			a	TX			8¾x3¼x¾	T
34		25BG		200		25000		10.00-22	11.00-22	Con B6427	6-4½x4½	427.5	9.325:127	260-672	2½x13½		Y	Fu 5A43	5	Tim	Q100P		H	** -6	17	Tim	35100TW		W84IA			a	TX			8¾x3¼x¾	T
35	(T)	18TG		137		18000		10.00-20	10.00-20	Con M6330	6-4x4¼	330.8	1.246:104	280-672	2½x12		Y	Cla 205V	5	Tim	H100P‡‡		H	** -5	29	Tim	32505TW		W84IA			a	TX			7¾x3¼x¾	T
36	(T)	H18TG		137		20000		10.00-20		Con M6330	6-4x4¼	330.8	1.246:104	280-672	2½x12		Y	Cla 205V	5	Tim	L100P‡‡		H	** -5	29	Tim	32505TW		W84IA			a	TX			7¾x3¼x¾	T
37	(T)	22TG		144		22000		10.00-20	10.00-22	Con B6427	6-4½x4½	427.5	9.325:127	260-672	2½x13½		Y	Fu 5A43	5	Tim	L100P‡‡		H	** -5	29	Tim	35100TW		W84IA			a	TX			8¾x3¼x¾	T
38	(T)	H22TG		144		24000		10.00-22		Con B6427	6-4½x4½	427.5	9.325:127	260-672	2½x13½		Y	Fu 5A43	5	Tim	Q100P‡‡		H	** -5	29	Tim	35100TW		W84IA			a	TX			8¾x3¼x¾	T
39	(T)	25TG		148		25000		10.00-22	11.00-22	Con R6514	6-4½x5½	514	9.100:170	260-672	3¾x		Y	Spi 6253	5	Tim	Q100P‡‡		H	** -6	17	Tim	35100TW		W84IA			a	2			8¼x3¼x¾	T
40	(T)	H25TG		148		25000		10.00-22		Con R6514	6-4½x5½	514	9.100:170	260-672	3¾x		Y	Spi 6253	5	Tim	R100P‡‡		H	** -6	17	Tim	35100TW		W84IA			a	2			8¼x3¼x¾	T
41	(T)	28TG		147		28000		10.00-22	11.00-24	Con R6602	6-4½x5½	602.5	9.484:199	260-672	3¾x		Y	Fu 5A650	5	Tim	S2002P‡‡		H	** -6	42	Tim	26450W		W84IA			a	2D			8¼x3¼x¾	T
42	(D) (T)	H22TD		144		22000		10.00-22	10.00-22	Her DWXD	6-4¼x4¼	404.15	3.20:135	260-672			Y	Fu 5A430	5	Tim	L300P		H	6 32-8	20	Tim	35000TW		W84IA			a	TX			8¾x3¼x¾	T
43	(D) (T)	25TD		148		25000		10.00-22		Her DWXD	6-4¼x4¼	404.15	3.20:135	260-672			Y	Fu 5A430	5	Tim	Q300P		H	6 33-8	53	Tim	35100TW		W84IA			a	TX			8¾x3¼x¾	T
44	(D) (T)	H25TD		148		25000		10.00-22	11.00-22	Her DRXC	6-4¼x5½	529.04	3.00:148	260-672	3½x13¾		Y	Spi 6253	5	Tim	Q300P		H	6 33-8	53	Tim	35000TW		W84IA			a	2			8¼x3¼x¾	T
45	(D) (T)	27TD		152		27000		10.00-22		Her DRXC	6-4¼x5½	529.04	3.00:148	260-672	3½x13¾		Y	Spi 6253	5	Tim	R300P		H	6 33-8	53	Tim	35000TW		W84IA			a	2			8¼x3¼x¾	T
46	(D) (T)	H27TD		152		27000		10.00-22	11.00-24	Cum HB600	6-4¾x6	672.17	5.00:150	180-672	3¼x16½		Y	Fu 5A920	5	Tim	R300P		H	4 92-6	42	Tim	26450W		W84IA			a	2			8¼x3¼x¾	T
47	(D) (T)	28TD		155		28000		10.00-22	11.00-24	Cum NHB600	6-5¼x6	774.15	5.57:200	210-672	3¼x16½		Y	Fu 5A920	5	Tim	S2002P‡‡		H	6 42		Tim	26450W		W84IA			a	2D			8¼x3¼x¾	T
48	(D) (T)	28TG		148		26000		10.00-22	11.00-22	Con R660	6-4½x5½	602.5	9.484:199	260-672	3¾x		Y	Fu 5A65	5	Tim	R100P‡‡		H	** -5	29	Tim	35100TW		W84IA			a	2			8¼x3¼x¾	T
50	Crosley	B		80		1310	**		4.50-12		Own		4-2½x2¼	44.7	8	33	26	5400	5	‡		WG-A8I-T92		3	Spi		2F		**	-5	17	Own		O4IH										C
51	Dodge	B-1-B		108	108		4850		6.00-16S	6.50-16S	Own T-142		6-3¼x4¼	217.6	6.17:1	95-360	84.1	2½x4	8	N	NP-88670		3	Own	T-142		H	H	4	1	4	78	Own	T-142		O4IH		175	264	Co	TX	40	4⅝x2¼x⅜	C
52		B-1-C		116	116		5500		TA-15-8	TA-15-8	Own T-144		6-3¼x4¼	217.6	6.17:1	95-360	84.1	2½x4	8	N	NP-88670		3	Own	T-144		H	H	4	1	4	78	Own	T-144		O4IH		184	276	Co	TX	48	4⅝x2¼x⅜	C
53		B-1-D		116	126		7500		6.00-16S	6.00-20S	Own T-146		6-3¼x4¼	230.6	7.184:102	360-4000	2½x4	8	N	NP-89980		3	Own	T-146		H	yH	3	1	4	89	Own	T-146		O4IH		212	316	Co	TX	48	4⅝x2¼x⅜	C
54		B-1-FL		128	152		9000		6.50-20D	8.25-20	Own T-148		6-3¼x4¼	230.6	6.192:109	360-4000	2½x5	054	N	NP-89760		4	Own	T-148		H	yH	5	1	6	6	8	Own	T-148		O4IH		336	479	Co	TX	60	21x2¼x⅞	C
55		B-1-F		128	192		14500		6.00-20SI	8.25-20	Own T-148		6-3¼x4¼	230.6	6.192:109	360-4000	2½x5	054	N	NP-89760		4	Own	T-148		H	yH	5	1	6	6	8	Own	T-148		O4IH		336	479	Co	TX	60	21x2¼x⅞	C
56		B-1-FA		128	192		14500		6.50-20D	8.25-20	Own T-148		6-3¼x4¼	230.6	6.192:109	360-4000	2½x5	054	N	NP-89760		4	Eat	A5-1350		S	Fd	5	1	8	8	11	Own	T-148		O4IH		336	479	Co	TX	60	21x2¼x⅞	C
57		B-1-H		128	192		15500		7.00-20▲	8.25-20	Own TX-148		6-3¼x4¼	230.6	6.192:109	360-4000	2½x5	054	N	NP-89760		4	Own	TX-148		H	yH	5	1	6	6	8	Own	TX-148		O4IHV		336	479	Co	TX	60	21x2¼x⅞	C
58		B-1-HA		128	192		15500		7.00-20▲	8.25-20	Own TX-148		6-3¼x4¼	230.6	6.192:109	360-4000	2½x5	054	N	NP-89760		4	Own	TX-148		H	yH	5	1	6	6	8	Own	TX-148		O4IHV		336	479	Co	TX	60	21x2¼x⅞	C
59	(C.O.E.)	B-1-FM		107	161		14750		6.00-20SI	8.25-20	Own T-152		6-3¼x4¼	230.6	6.192:109	360-4000	2½x5	054	N	NP-88070		4	Eat	A5-1350		S	Fd	5	1	8	8	11	Own	TX-148		O4IHV		336	479	Co	TX	60	21x2¼x⅞	C
60	(C.O.E.)	B-1-FMA		107	161		14750		6.50-20D	8.25-20	Own T-152		6-3¼x4¼	230.6	6.192:109	360-4000	2½x5	054	N	NP-88070		4	Own	T-152		H	yH	5	1	6	6	8	Own	T-152		O4IH		336	479	Co	TX	60	21x2¼x⅞	C
61	(C.O.E.)	B-1-HM		107	161		15750		7.00-20▲	8.25-20	Own TX-152		6-3¼x4¼	230.6	6.192:109	360-4000	2½x5	054	N	NP-88070		4	Own	TX-152		H	yH	5	1	6	6	8	Own	TX-152		O4IHV		336	479	Co	TX	60	21x2¼x⅞	C
62	(C.O.E.)	B-1-HMA		107	161		15750		7.00-20▲	8.25-20	Own TX-152		6-3¼x4¼	230.6	6.192:109	360-4000	2½x5	054	N	NP-88070		4	Eat	A5-1350		S	Fd	5	1	8	8	11	Own	TX-152		O4IHV		336	479	Co	TX	60	21x2¼x⅞	C
63		B-1-HH		128	192		15500		7.00-20▲	8.25-20	Own TX-148		6-3¼x4¼	230.6	6.192:109	360-4000	2½x5	054	N	NP-89760		4	Own	TX-148		H	yH	5	1	6	6	8	Own	TX-148		O4IHV		336	479	Co	TX	60	21x2¼x⅞	C
64		B-1-HHA		128	192		15500		7.00-20▲	8.25-20	Own TX-148		6-3¼x4¼	230.6	6.192:109	360-4000	2½x5	054	N	NP-89760		4	Eat	A5-1350		S	Fd	5	1	8	8	11	Own	TX-148		O4IHV		336	479	Co	TX	60	21x2¼x⅞	C
65	(C.O.E.)	B-1-HHM		107	161		15750		7.00-20▲	8.25-20	Own TX-152		6-3¼x4¼	230.6	6.192:109	360-4000	2½x5	054	N	NP-88070		4	Own	TX-152		H	yH	5	1	6	6	8	Own	TX-152		O4IHV		336	479	Co	TX	60	21x2¼x⅞	C
66	"	B-1-HHMA		107	161		15750		7.00-20▲	8.25-20	Own TX-152		6-3¼x4¼	230.6	6.192:109	360-4000	2½x5	054	N	NP-88070		4	Eat	A5-1350		S	Fd	5	1	8	8	11	Own	TX-152		O4IHV		336	479	Co	TX	60	21x2¼x⅞	C
67		B-1-JL		128	212		16500		6.00-20SI	8.25-20	Own T-150		6-3¼x4¼	230.6	6.204:114	360-4000	2½x5	054	N	NP-88400		5	Own	T-150		H	yH	5	2	7	16	Own	T-150		O4IHV		396	553	e	TX	60	9x2¼x⅝	C
68		B-1-JAL		128	212		16500		6.00-20SI	8.25-20	Own T-150		6-3¼x4¼	230.6	6.204:114	360-4000	2½x5	054	N	NP-88400		5	Eat	A5-1350		S	Fd	5	2	8	11	Own	T-150		O4IHV		396	553	e	TX	60	9x2¼x⅝	C
69		B-1-KAL		128	212		17000		7.50-20S	9.00-20	Own TX-150		6-3¼x4¼	230.6	6.204:114	360-4000	2½x5	054	N	NP-88400		5	Eat	A5-1350		S	Fd	5	2	8	11	Own	T-150		O4IHV		396	553	e	TX	60	9x2¼x⅝	C
70	(C.O.E.)	B-1-JMI		107	161		16750		6.00-20SI	8.25-20	Own T-154		6-3¼x4¼	230.6	6.204:114	360-4000	2½x5	054	N	NP-88410		5	Own	T-154		H	yH	5	2	7	16	Own	T-154		O4IHV		396	553	e	TX	60	9x2¼x⅝	C
71		B-1-JMAL		107	161		16750		6.20-20SI	8.25-20	Own T-154		6-3¼x4¼	230.6	6.204:114	360-4000	2½x5	054	N	NP-88410		5	Eat	A5-1350		S	Fd	5	2	8	11	Own	T-154		O4IHV		396	553	e	TX	60	9x2¼x⅝	C
72	"	B-1-KMAL		107	161		17250		7.50-20S	9.00-20	Own TX-154		6-3¼x4¼	230.6	6.204:114	360-4000	2½x5	054	N	NP-88410		5	Eat	A6500		S	Fd	5	2	8	11	Own	T-154		O4IHV		396	553	e	TX	60	9x2¼x⅝	C
73		B-1-J		128	212		16500		6.50-20D	8.25-20	Own T-150		6-3¼x4¼	230.6	6.204:114	360-4000	2½x5	054	N	NP-88400		5	Own	T-150		H	yH	5	2	7	16	Own	T-150		O4IHV		396	553	e	TX	60	9x2¼x⅝	C
74		B-1-JA		128	212		16500		6.50-20D	8.25-20	Own T-150		6-3¼x4¼	230.6	6.204:114	360-4000	2½x5	054	N	NP-88400		5	Eat	A5-1350		S	Fd	5	2	8	11	Own	T-150		O4IHV		396	553	e	TX	60	9x2¼x⅝	C

♦ 8.25-20 front tires are required when 9.00-20 dual rears are used.

■ Pick-up truck; panel delivery 1343.

‡‡ Two speed axles available.

‡ Own Loadmaster engine available on models SJ-SK-SL at extra cost.

2 Front only: Rear 6.50-20S.

3 Chevrolet own rear axle (5.43:1) available on Models SJ-SK-SL. Chevrolet own 2-speed rear axle (6.13-8.10:1) available at extra cost on Models SVS-SWS-SP-SPS-SR-SRS-SS-SSS-SV-SW-SX.

▲ 7.50-20 can be used on the front with no decrease in 15000 lb. G. V. W. when 8.25-20 are used on dual rear wheels.

● Sleeper cab models available.

† 7.00-17 tire is optional for Rear or Front and Rear, with no increase in G.V.W.

† Forward control Chassis for Door-to-Door delivery bodies.

1 Front only: Rear 8.25-20.

4 Front only: Rear 7.00-168.

‡ 1 Front 1.375x1.312; 3 Center 1.375x.870; 1 Rear 1.500x1.499.

†† Diameter: (Average) Front, 2.6858. Front Center, 2.7168. Rear Center, 2.7478. Rear, 2.7788. Total length, 5⅝.

♦ Front only: Rear 7.50-20D. ● Includes cab.

▲—Includes spare tire, full fuel tank and cooling system.

For page on which Directory of Manufacturers appears, see Table of Contents page 65

CURRENT TRUCK SPECIFICATIONS—*Continued*

Line Number	MAKE AND MODEL	Chassis List Price	WHEEL-BASE: Minimum Standard	WHEEL-BASE: Maximum Standard	Gross Vehicle Weight for Normal Service	TIRE SIZES (D-dual rear, S-single rear): Chassis Weight (See definition)	Standard Front and Rear	Maximum Authorized Load (Duals unless noted)	ENGINE DETAILS: Make and Model	No. of Cylinders, Bore and Stroke	Displacement	Comp. Ratio	Torque lb. ft.	Max. Brake H.P. at R.P.M. Given	Main Bearings: Number	Main Bearings: Diameter and Length	Governor Standard	TRANSMISSION: Make and Model	Forward Speeds	REAR AXLE: Make and Model	Gear and Type	Drive & Torque	Gear Ratio Range in High	FRONT AXLE: Make and Model	BRAKES: SERVICE: Make	Location	Operation	Lining Area	Drum Diameter	Drum Material	Hand	Location	Type	CA Dimensions (Min. Std., Wt. Bl.)	FRAME: Side Rail Dimensions	Type
	Dodge Cont'd																																			
1	B-1-KA		125	212	17000		7.50-20‡	9.00-20	4Own TX-150	6-3⅞x4½	230.6	6.20	114	94@3400	4	2⅛x.054	Y	NP-ss8480	5 Fat 16500	8Fd	H 6.14	S 5.43	4Own TX-150	O4IHV		396	553¢	TX	60	⅛x2⅜	x8⅛	C
2	(4 cyl.) B-1-JM		107	161	16750		6.50-20‡	8.25-20	4Own T-154	6-3⅛x4½	230.6	6.20	114	94@3400	4	2⅛x.054	Y	NP-ss8410	5 Fat A5-1350	8Fd	H 6.14	S 5.43	4Own T-154	O4IHV		396	553¢	TX	60	⅛x2⅜	x8⅛	C
3	(4 cyl.) B-1-JMA		107	161	16750		6.50-20‡	8.25-20	4Own T-154	6-3⅛x4½	230.6	6.20	114	94@3400	4	2⅛x.054	Y	NP-ss8410	5 Fat 16500	8Fd	H 6.14	S 5.43	4Own TX-154	O4IHV		396	553¢	TX	60	⅛x2⅜	x8⅛	C
4	(6 cyl.) B-1-KMA		107	161	17250		7.50-20‡	9.00-20	4Own TX-154	6-3⅛x4½	230.6	6.20	114	94@3400	4	2⅛x.054	Y	NP-ss8410	5 Timlt 11001DPH	8Hy	H 6.8	S 7.2	4Own T-156	O4IHV		396	609¢	TX	60	⅛x2⅜	x8⅛	C
5	B-1-R		140	229	18500		7.50-20‡	9.00-20	4Own T-156	6-3⅛x5	281.9	6.22	125	112@3200	7	2x11	Z	NP-ss8220	5 Tim H100	8Hd	H 6.14	S 5.43	4Own T-156	O4IHV		396	609¢	TX	60	⅛x3⅛	x9½	C
6	B-1-RA		140	229	18500		7.50-20‡	10.00-20	4Own T-158	6-3⅛x5	331.6	5.27	128	98@3200	7	2x11	Z	NP-ss8450	5 Tim L100	8Hy	H 6.8	S 7.4	4Tim 32516A1	O4IHV		424	666¢	TX	60	⅛x3⅛	10	C
7	B-1-T		140	190	21000		9.00-20‡	11.00-20	4Own TX-158	6-3⅛x5	331.6	5.27	128	98@3200	7	2x11	Z	NP-ss8450	5 Tim L300	8Hd	H 6.3	S 9.18	4Tim 32516A1	O4IHV		424	666¢	TX	60	⅛x3⅛	10	C
8	B-1-TA		140	190	21000		7.50-20‡	10.00-20	4Own T-158	6-3⅛x5	331.6	5.27	128	98@3200	7	2x11	Z	NP-ss8450	5 Tim Q300	8Hy	H 7.58	S 5.91	4Tim 35020nx9	O4IHV		485	770¢	TX	60	⅛x3⅛	10	C
9	B-1-V		130	190	21000		9.00-20‡	11.00-20	4Own TX-158	6-3⅛x5	331.6	5.27	128	98@3200	7	2x11	Z	NP-ss8450	5 Tim Q300	8Hd	H 6.5	S 9.5	4Tim 35020nx9	O4IHV		485	770¢	TX	60	⅛x3⅛	10	C
10	B-1-VA		130	190	21000		9.00-20‡	11.00-20																												
11	Rte. Van B-1-191		102	117	7900		7.00-16	8.25-16R	4Own T-164	6-3¼x4¼	230.6	7.18	102	86@4000	4	2¼x4	S	NP-ss8480	4 Own T-164	8Hy	H 4.89		4Own T-164	O4IH		212	316¢	TX	No	⅛x2⅜	x8⅛	C
12	B-1-RA		102	142	10100		7.50-16‡	9.00-16R	4Own T-165	6-3¼x4¼	230.6	7.18	102	86@4000	4	2¼x4	S	NP-ss8480	4 Own T-165	8Hy	H 5.83		4Own T-165	O4IH		240	353¢	TX	No	⅛x2⅜	x8⅛	C
	School Buses																																			
13	B-1-TS		152	192	15000		6.50-20‡	7.00-20	4Own TS-148	6-3⅛x4½	230.6	6.19	109	86@4000	4	2⅛x.054	N	NP-ss9760	4 Own T-148	8Hy	H 5	S 6	4Own T-148	O4IHV		396	479¢	TX			21x2½	x7	C
14	B-1-JS		212	212	17000		7.50-20‡	8.25-20	4Own TS-150	6-3⅛x4½	230.6	6.20	114	94@3400	4	2⅛x.054	Y	NP-ss8400	4 Own T-150	8Hy	H 5	S 6	4Own T-150	O4IHV		396	553¢	TX		⅛x2⅜	x8⅛	C
15	B-1-RS		229	229	19000		8.25-20‡	9.00-20	4Own TS-156	6-3⅛x5	281.9	6.22	125	112@3200	7	2x11	Z	NP-ss8220	5 Timlt 11001DPH	8Hy	H 6.8	S 7.2	4Own T-156	O4IHV		396	609¢	TX		⅛x3⅛	x9½	C
16	Duplex T		136	220	18000	6980	8.25-20D	9.00-20	Her JXD	6-4¼x4¼	320	6.2	140	113-300@2400	7	2½x10¼	Y	Fu 5B330	5 Tim H100	B	H ** -7		20Tim 32502	L4IHV		420	654	A	TX	57⅛	9¼x3⅛	x8⅛	C
17	TH-304		136	220	18000	6980	8.25-20D	9.00-20	Her WXLC-3	6-4¼x4¼	404.5	5.8	312	139-260@2400	7	2½x13¼	Y	Fu 5A430	5 Tim Q300	DF	H 6.58	S 8.53	5Tim 35100	L4IHV		730	1016	A	TX	49⅛	9¼x3⅛	x8⅛	C
18	R		136	220	25000	8630	9.00-20D	10.00-20	Her WXLC-3	6-4¼x4¼	404.5	5.8	312	139-260@2400	7	2½x13¼	Y	Fu 5A430	5 Tim Q300	DF	H 6.58	S 8.53	5Tim 35100	L4IHV		730	1016	A	TX	49⅛	9¼x3⅛	x8⅛	C
19	JH-4		148	220	28000	9800	10.00-20D	11.00-20	Her RXB	6-4⅛x5⅛	501.5	4.36	0 137-240@2400		7	2½x13⅛	Y	Fu 5A620	5 Tim S-300	2F	R ** -9	S 8.53	5Tim 26450	Ws41A		912	1311	A	TX	61¼	10	x8x1⅛	x8⅛	C
20	JH-5S		148	220	28000	9800	10.00-20D	11.00-20	Her RXLD	6-4⅛x5⅛	558.5	3.93	154	24@2400	7	2½x13⅛	Y	Fu 5A620	5 Tim S-300	DF	R 6.58	S 8.53	5Tim 26450	Ws41A		912	1311	A	TX	60¾	10	x8x1⅛	x8⅛	C
21	KH-4		148	220	32000	10500	11.00-20D	11.00-20	Her RXC	6-4⅛x5⅛	529.5	4.35	145	23@2400	7	2½x13⅛	Y	Fu 5A620	5 Tim T-200	2F	R ** -9	S 8.53	5Tim 26450	Ws41A		912	1311	A	TX	60¾	10	x8x1⅛	x8⅛	C
22	1		148	220	37000	11300	11.00-20D	13.00-20	Her RXLD	6-4⅛x5⅛	558.5	4.36	0 137-240@2400		7	2½x13⅛	Y	Fu 5A620	5 Tim T-200	2F	R ** -7	S 7.77	5Tim 35100	Ws41A		730	1016	A	TX	61¼	9¼x3⅛	x8⅛	C
23	RH-501		172	208	27000	9500	10.00-20	11.00-20	Her RXD	6-4⅛x5⅛	501.5	4.36	0 137-240@2400		7	2½x13⅛	Y	Fu 5A620	Tim Q200	2F	R ** -7	S 7.77	5Tim 35100	Ws41A		730	1016	A	TX	61¼	9¼x3⅛	x8⅛	C
24	**Federal** 16M		139	194	15500	4460	7.50-20D	7.50-20	Her JXD	6-3⅛x4¼	245		184	90-110@2400	7	2¼x10¼	N	WG T9	4 T 53-47DH	8F	H ** -5		6Tim 38000HX	L4IHV		310	482¢	A	TX	60	8½x2⅞x	8¼	T
25	16M2		139	194	15500	4500	7.50-20D	8.25-20D	Her JXD	6-3⅛x4¼	245		184	90-110@2400	7	2¼x10¼	N	WG T9	4 Tim H3000DH	8F	H 6.13	S 10	Tim 38000HX	L4IHV		310	482¢	A	TX	60	8½x2⅞x	8¼	T
26	18M		139	194	17000	4700	8.25-20D	8.25-20	Her JXBI	6-3¾x4¾	263		190	96-110@2400	7	2½x10¼	N	WG T9	4 Tim H3001*DH	8F	H ** -6		20Tim 39003H	LT41HV		314	532¢	A	TX	60	8½x2⅞x	8¼	T
27	18M2		139	194	17000	4830	8.25-20D	8.25-20	Her JXBE	6-3¾x4¾	263		190	96-110@2400	7	2½x10¼	N	WG T9	5 Tim H3001*DH	8F	H 6.13	S 10	Tim 39003H	LT41HV		314	532¢	A	TX	60	8½x2⅞x	8¼	T
28	25M		139	194	19000	5000	9.00-20	9.00-20	Her JXD	6-3⅞x4¼	282		212	102-130@2400	7	2¼x10¼	N	Q la 205VO	4 T 53-47DH	8F	H ** -8		8Tim 31000H	LT41HV		346	583¢	A	TX	60	8½x2⅞x	8¼	T
29	25M2		139	194	19000	5100	9.25-20D	9.00-20	Her JXD	6-3⅞x4¼	282		212	102-130@2400	7	2¼x10¼	N	Q la 205VO	5 Tim H3001*DH	8F	H 6.13	S 13	Tim 31000H	LT41HV		346	583¢	A	TX	60	8½x2⅞x	8¼	T
30	29M		139	194	21500	5000	9.00-20D	10.00-20	Her JXDD	6-4¼x4¼	320		250	112-280@2400	7	2½x10¼	Y	Q la 205V	5 Tim L100DPH	8F	H ** -8	S 8.53	5Tim 32514H	LT41HV		466	820	A	TD	76	8½x2⅞x	8¼	T
31	29M2		139	194	21500	5000	9.00-20D	10.00-20	Her JXDD	6-4¼x4¼	320		250	112-280@2400	7	2½x10¼	Y	Q la 205V	10 Tim L100DPH	8F	H 6.32	S 22	Tim 32514H	LT41HV		466	820	A	TD	76	8½x2⅞x	8¼	T
32	29MA		155	194	21500	5050	9.00-20D	10.00-20	Her JXDF	6-4¼x4¼	320		250	112-280@2400	7	2½x10¼	Y	Q la 205A♦	5 Tim L100DPH	8F	H ** -6.83		Tim 32514H	LT41HV		466	820	A	TD	76	8½x2⅞x	8¼	T
33	29ML		139	194	21500	5555	9.00-20D	10.00-20	Her JXLHD	6-4x5½	339		272	126-280@2400	7	2½x10¼	Y	Q la 205V	5 Tim L100DPH	8F	H ** -6	S 8.53	Tim 32514H	LT41HV		466	820	A	TD	76	8½x2⅞x	8¼	T
34	29ML2		139	194	21500	5725	9.00-20D	10.00-20	Her JXLHD	6-4x5½	339		272	126-280@2400	7	2½x10¼	Y	Q la 205V	10 Tim L100DPH	8F	H 6.32	S 22	Tim 32514H	LT41HV		466	820	A	TD	76	8½x2⅞x	8¼	T
35	29MLA		139	194	21500	5985	9.00-20D	10.00-20	Her JXLHF	6-4x5½	339		272	126-280@2400	7	2½x10¼	Y	Q la 205V	15 Tim L100DPH	8F	H ** -6	S 8.53	Tim 32514H	LT41HV		466	820	A	TD	76	8½x2⅞x	8¼	T
36	35M		143	203	22500	6925	9.00-20D	10.00-20	Con T6571F	6-4x5½	371		290	133-260@2400	7	2½x13⅛	Y	Q la 270VO	5 Tim L100DPH	8F	H ** -6	S 8.53	Tim 32514H	LT41HV		466	820	A	TD	60½	10	x3⅛	x8⅛	T
37	35M2		143	203	22500	7315	9.00-20D	10.00-20	Con T6571F	6-4x5½	371		290	133-260@2400	7	2½x13⅛	Y	Q la 270VO	10 Tim L100DPH	8F	H 6.32	S 22	Tim 32514H	LT41HV		466	820	A	TD	60½	10	x3⅛	x8⅛	T
38	45M		143	203	26000	8095	10.00-20D	10.00-20	Con T6427F	6-4¼x4¼	427		342	155-260@2400	7	2½x13⅛	Y	Q la 270VO	5 Tim Q100F	8F	R ** -6.83		Tim 35011TW	TW41A		606	933¢	A	TD	60½	10	x3⅛	x8⅛	T
39	45M2		143	203	26000	8380	10.00-20D	10.00-20	Con T6427F	6-4¼x4¼	427		342	155-260@2400	7	2½x13⅛	Y	Q la 270VO	10 Tim Q300F	dF	R 6.53	S 8.53	Tim 35011TW	TW41A		606	933¢	A	TD	60½	10	x3⅛	x8⅛	T
40	55M2		143	203	30800	8635	11.00-20D	11.00-24	Con T6427F	6-4¼x4¼	427		342	155-260@2400	7	2½x13⅛	Y	Q la 270VO	10 Tim S-300F	Hy‡	R 6.58	S 8.53	Tim 39021TW	TW41A		722	1051	a	TD	60½	10	x3⅛	x8⅛	T
41	65MA		155	203	33000	8765	11.00-20D	11.00-24	Con T6427F	6-4¼x4¼	427		342	155-260@2400	7	2½x13⅛	Y	Q la 270V♦	15 Tim S-200P	2F	R ** -7	S 8.53	Tim 39021TW	TW41A		722	1051	a	TD	72½	10	x3⅛	x8⅛	T
42	60M		143	203	32000	9600	11.00-20D	11.00-24	Con 22RF	6-4¼x5¼	501		384	148-240@2400	7	2¼x14¼	Y	Fu 5A654	5 Tim S200P	2F	R ** -7	S 8.53	Tim 39021TW	Tw41A		722	1051	a	FX	72½	10	x3⅛	x8⅛	T
43	60M2		143	203	32000	9470	11.00-20D	11.00-24	Con 22RF	6-4¼x5¼	501		384	148-240@2400	7	2¼x14¼	Y	Fu 5A650	10 Tim S300P	Hy‡	R 6.53	S 8.53	Tim 39021TW	Tw41A		722	1051	a	TD	60½	10	x3⅛	x8⅛	T
44	65M		141	201	33000	9995	11.00-20D	11.00-24	Con R6602F	6-4¼x5¼	582		464	200-240@2400	7	2¼x14¼	Y	Fu 5A650	10 Tim S300P	Hy‡	R 6.53	S 8.53	Tim 39000TW	Ws41A		722	1051	a	TD	60½	10	x3⅛	x8⅛	T
45	65MA		155	201	33000	10225	11.00-20D	11.00-24	Con R6602F	6-4¼x5¼	582		464	200-240@2400	7	2¼x14¼	Y	Fu 5A654	15 Tim S200P	Hy‡	R ** -7	S 8.53	Tim 39000TW	Ws41A		722	1051	a	TD	72½	10	x3⅛	x8⅛	T
	Ford F-1																																			
46	Cowl 9H(-S4	930	114	114	4700	2224	6.00-16-4	6.50-16-6	S8Own 7HC	6-3 3x4	226.6	s180	95-130@4000	4-2	87x4	S	N	Own 21C	3 Own SC	H½	H 3.73-4.27		Own SRC	O4IH		178	259¢	Co	M2	40	065	92x2½	x15	T
47	Cowl 9H(-S4	960	114	114	4700	2264	6.00-16-4	6.50-16-6	S8Own 7HC	6-3⅞x3½	239.6	s180	100-138@3800	3-2	49x4	9	N	Own 21C	3 Own SC	H½	H 3.73-4.27		Own SRC	O4IH		178	259¢	Co	M2	40	065	92x2½	x15	T
	F-2																																			
48	Cowl 9HD-S4	1045	122	122	5700	2617	6.50-16-6	7.00-16-6	S8Own 7HD	6-3 3x4	226.6	s180	95-130@4000	4-2	87x4	S	N	Own 31Y	3 Own SD	SF	H ** -4		8Own SRD	O4IH		167	264¢	Co	M2	48	066x2¼	x 19	T
49	Cowl 9HD-S4	1075	122	122	5700	2677	6.50-16-6	7.00-16-6	S8Own SRD	6-3⅞x3½	239.6	s180	100-138@3800	3-2	49x4	9	N	Own 31Y	3 Own SD	SF	H ** -4		8Own SRD	O4IH		167	264¢	Co	M2	48	066x2¼	x 19	T
	F-3																																			
50	Cowl 9HY-S4	1120	122	122	9500	2847	7.00-17-6	7.50-17-8	S8Own 7HY	6-3 3x4	226.6	s180	95-130@4000	4-2	87x4	S	N	Own 31Y	3 Own SY	SF	H ** -4		8Own SRY	O4IH		188	308¢	Co	M2	48	066x2¼	x 19	T
51	Cowl 9HY-S4	1150	122	122	9500	2887	7.00-17-6	7.50-17-8	S8Own SRY	6-3⅞x3½	239.6	s180	100-138@3800	3-2	49x4	9	N	Own 31Y	3 Own SY	SF	H ** -4		8Own SRY	O4IH		188	308¢	Co	M2	48	066x2¼	x 19	T
	F-3 Parcel Dlvy																																			
52	W 9HJ	1375	104	104	7500	3056	7.00-16-6	7.50-17-8	S8Own 8HJ	6-3 3x4	226.6	s180	95-130@4000	4-2	87x4	S	N	Own 8J	3 Own SJ	SF	H ** -4		8Own SJ	O4IH		215	330¢	TX	82♦	6x2¼	x 19	T
53	W 9HJ2	1390	122	122	7500	3128	7.00-16-6	7.50-17-8	S8Own 8HJ	6-3⅞x3½	239.6	s180	100-138@3800	3-2	49x4	9	N	Own 8J	3 Own SJ	SF	H ** -4		8Own SJ	O4IH		215	330¢	TX	100♦	6x2¼	x 19	T
	F-4																																			
54	Cowl 9HTL-S4	1175	134	134	10000	3328	7.00-20-8	8.87.00-18-8	Own 7HT	6-3 3x4	226.6	s180	95-135@4000	4-2	87x4	S	N	Own 41T	3 Own ST	SF	H 5.14-5.83		Own 7RTL	O4IH		302	506¢	Co	60	067x2¼	x 21	T	
55	Cowl 9HTL-S4	1205	134	134	10000	3367	7.00-20-8	8.87.00-18-8	Own SRT	6-3⅞x3½	239.6	s180	100-138@3800	3-2	49x4	9	N	Own 41T	3 Own ST	SF	H 5.14-5.83		Own 7RTL	O4IH		302	506¢	Co	60	067x2¼	x 21	T	
	F-5																																			
56	Cowl 9HT-S4	1220	134	134	14000	3758	6.50-20-6	7.50-20-8	S8Own 7HT	6-3 3x4	226.6	s180	95-135@4000	4-2	87x4	S	N	Own 41T	3 Own ST	SF	H 5.14-6.67		Own 7RT	O4IH		302	506¢	Co	60	067x2¼	x 21	L	
57	Cowl 9HT-S4	1250	134	134	14000	3798	6.50-20-6	7.50-20-8	S8Own SRT	6-3⅞x3½	239.6	s180	100-138@3800	3-2	49x4	9	N	Own 41T	3 Own ST	SF	H 5.14-6.67		Own 7RT	O4IH		302	506¢	Co	60	067x2¼	x 21	L	
58	Cowl 9HRT-S4	1250	138	138	14000	3843	6.50-20-6	7.50-20-8	Own 7HT	6-3 3x4	226.6	s180	95-135@4000	4-2	87x4	S	N	Own 41T	3 Own ST	SF	H 5.14-6.67		Own 7RT	O4IH		302	506¢	Co	84	067-2¼x	21*	LT	
59	Cowl 9HRT-S4	1280	138	138	14000	3883	6.50-20-6	7.50-20-8	Own SRT	6-3⅞x3½	239.6	s180	100-138@3800	3-2	49x4	9	N	Own 41T	3 Own ST	SF	H 5.14-6.67		Own 7RT	O4IH		302	506¢	Co	84	067-2¼x	21*	LT	
	F-6 C.O.E.																																			
60	Cab 9HOW-S4	1695	110	110	14000	4123	6.50-20-6	7.50-20-8	Own 7HW	6-3 3x4	226.6	s180	95-135@4000	4-2	87x4	S	N	Own 41T	3 Own ST	SF	H 5.14-6.67		Own 7RW	O4IH		302	506¢	Co	60	067x2¼	x 21*	LT	
61	Cab 9HOW-S4	1635	110	110	14000	4163	6.50-20-6	7.50-20-8	Own SRW	6-3⅞x3½	239.6	s180	100-138@3800	3-2	49x4	9	N	Own 41T	3 Own ST	SF	H 5.14-6.67		Own 7RW	O4IH		302	506¢	Co	84	067.08x2.8x	*LT		
62	Cab 9HW-S4	1655	134	134	14000	4183	6.50-20-6	7.50-20-8	Own 7HW	6-3 3x4	226.6	s180	95-135@4000	4-2	87x4	S	N	Own 41T	3 Own ST	SF	H 5.14-6.67		Own 7RW	O4IH		302	506¢	Co	84	067.08x2.8x	*LT		
63	Cab 9RW-S4	1665	134	134	14000	4323	6.50-20-6	7.50-20-8	Own SRW	6-3⅞x3½	239.6	s180	100-138@3800	3-2	49x4	9	N	Own 41T	3 Own ST	SF	H 5.14-6.67		Own 7RW	O4IH		302	506¢	Co	84	067.08x2.8x	*LT		
64	Cab 9HSW-S4	1665	158	158	14000	4183	6.50-20-6	7.50-20-8	Own 7HW	6-3 3x4	226.6	s180	95-135@4000	4-2	87x4	S	N	Own 41T	3 Own ST	SF	H 5.14-6.67		Own 7RW	O4IH		302	506¢	Co	108	17.08x2.8x	*LT		
65	Cab 9RSW-S4	1695	158	158	14000	4423	6.50-20-6	7.50-20-8	Own SRW	6-3⅞x3½	239.6	s180	100-138@3800	3-2	49x4	9	N	Own 41T	3 Own ST	SF	H 5.14-6.67		Own 7RW	O4IH		302	506¢	Co	108	17.08x2.8x	*LT		
	F-5 School Bus																																			
66	Bus (4 9HST-S4	1315	158	158	12000	3855	6.50-20-6	7.00-20-8	Own 7HT	6-3 3x4	226.6	s180	95-135@4000	4-2	87x4	S	N	Own 41T	3 Own ST	SF	H 5.14-6.67		Own 7RT	O4IH		302	506¢	Co	128♦	7x2¼x	21*	LT	
67	Bus (4 9HST-S4	1345	158	158	12000	3895	6.50-20-6	7.00-20-8	Own SRT	6-3⅞x3½	239.6	s180	100-138@3800	3-2	49x4	9	N	Own 41T	3 Own ST	SF	H 5.14-6.67		Own 7RT	O4IH		302	506¢	Co	128♦	7x2¼x	21*	LT	
68	Bus (4 9HAT-S4	1530	194	194	15000	4260	7.50-20-8	8.25-20-10	Own 7HT	6-3 3x4	226.6	s180	95-135@4000	4-2	87x4	S	N	Own 41T	3 Own ST	SF	H 5.14-6.67		Own 7RTH	O4IH		302	506¢	Co	164♦	7.08x2.8x	*LT		
69	Bus (4 9RAT-S4	1560	194	194	15000	4300	7.50-20-8	8.25-20-10	Own SRT	6-3⅞x3½	239.6	s180	100-138@3800	3-2	49x4	9	N	Own 41T	3 Own ST	SF	H 5.14-6.67		Own 7RTH	O4IH		302	506¢	Co	164♦	7.08x2.8x	*LT		

† Front only, Rear 10.00-20.
▲ Front only, Rear 8.25-20.
♦ Cowl to Axle.
● For shorter wheelbases 103⅞", 115".
♣ Auxiliary trans. Spicer 6231B, three forward speeds.
‡ Auxiliary trans. Spicer 7034F, three forward speeds.
††—Front only, Rear 8.25-16.
*—Reinforcement 6-5 8x2 21x 125, extended to include front spring rear brackets and rear spring front brackets.

CURRENT TRUCK SPECIFICATIONS—*Continued*

Line Number	MAKE AND MODEL	Chassis List Price	WHEEL-BASE: Minimum Standard	WHEEL-BASE: Maximum Standard	Gross Vehicle Weight for Normal Service	TIRE SIZES (D-dual rear, S-single rear): Chassis Weight (See definition)	TIRE SIZES: Standard Front and Rear	TIRE SIZES: Maximum Authorized Tire Size (Duals unless noted)	ENGINE DETAILS: Make and Model	No. of Cylinders, Arrangement and Stroke	Displacement	Comp. Ratio	Torque lb. ft.	Max. Brake H.P. at R.P.M. Given	Main Bearings: Number	Main Bearings: Diameter	Main Bearings: Length	Governor Standard	TRANSMISSION: Make and Model	TRANSMISSION: Forward Speeds	REAR AXLE: Make and Model	REAR AXLE: Gear and Type	REAR AXLE: Drive & Torque	REAR AXLE: Gear Ratio Range in High	FRONT AXLE: Make and Model	BRAKES: SERVICE: Make	BRAKES: SERVICE: Location	BRAKES: SERVICE: Type Operation	BRAKES: SERVICE: Lining Area	BRAKES: SERVICE: Drum Diam.	BRAKES: SERVICE: Drum Width	BRAKES: SERVICE: Drum Material	BRAKES: SERVICE: Hand Location Type	BRAKES: C-A Dimensions (Min. Std. W. B.)	FRAME: Side Rail Dimensions	FRAME: Type
	Ford, Continued																																			
	Tilt																																			
1	Cowl 9HTH-S1	1610	134	134	15500	4069	7.50-20	8.25/20-10	Own 7HT	6-3 3x4	226.6	5.1	80	95-3300	4-2	2.87x3	S	N	Own 4UT	4	Own STH	Hy	H	**	7.2	Own 7RTH	O4IHV	302	506	Co	TX	60	66 7.08x2.88x	LT
2	Cowl 9RTH-S1	1640	134	134	15500	4109	7.50-20	8.25/20-10	Own 7RT	6-3 3x4	226.6	5.1	80	95-3300	4-2	2.87x3	S	N	Own 4UT	4	Own STH	Hy	H	**	7.2	Own 7RTH	O4IHV	302	506	Co	TX	60	66 7.08x2.88x	LT
3	Cowl 9HST-S1	1640	158	158	15500	4169	7.50-20	8.25/20-10	Own 7HT	6-3 3x4	226.6	5.1	80	95-3300	4-2	2.87x3	S	N	Own 4UT	4	Own STH	Hy	H	**	7.2	Own 7RTH	O4IHV	302	506	Co	TX	84	66 7.08x2.88x	LT
4	Cowl 9RST-S1	1670	158	158	15500	4209	7.50-20	8.25/20-10	Own 7RT	8-3 A x3	239.6	5.1	80	100-3800	3-2	49x3	9	N	Own 4UT	4	Own STH	Hy	H	**	7.2	Own 7RTH	O4IHV	302	506	Co	TX	84	66 7.08x2.88x	LT
	Feb COE																																			
5	Cab 9HOWH-S1	1990	110	110	16000	4569	7.50-20	8.25/20-10	Own 7HW	6-3 3x4	226.6	5.1	80	95-3300	4-2	2.87x3	S	N	Own 4UT	4	Own STH	Hy	H	**	7.2	Own 7RW	O4IHV	302	506	Co	TX	60	66 7.67x2¾x	21	LT
6	Cab 9ROWH-S1	2020	110	110	16000	4607	7.50-20	8.25/20-10	Own 7RW	8-3 A x3	239.6	5.1	80	100-3800	3-2	49x3	9	N	Own 4UT	4	Own STH	Hy	H	**	7.2	Own 7RW	O4IHV	302	506	Co	TX	60	66 7.67x2¾x	21	LT
7	Cab 9HWH-S1	2020	134	134	16000	4728	7.50-20	8.25/20-10	Own 7HW	6-3 3x4	226.6	5.1	80	95-3300	4-2	2.87x3	S	N	Own 4UT	4	Own STH	Hy	H	**	7.2	Own 7RW	O4IHV	302	506	Co	TX	84	66 7.08x2.88x	LT
8	Cab 9RWH-S1	2050	134	134	16000	4768	7.50-20	8.25/20-10	Own 7RW	8-3 A x3	239.6	5.1	80	100-3800	3-2	49x3	9	N	Own 4UT	4	Own STH	Hy	H	**	7.2	Own 7RW	O4IHV	302	506	Co	TX	84	66 7.08x2.88x	LT
9	Cab 9HSWH-S1	2050	158	158	16000	4828	7.50-20	8.25/20-10	Own 7HW	6-3 3x4	226.6	5.1	80	95-3300	4-2	2.87x3	S	N	Own 4UT	4	Own STH	Hy	H	**	7.2	Own 7RW	O4IHV	302	506	Co	TX	108	17.08x2.88x	LT
10	Cab 9RSWH-S1	2080	158	158	16000	4868	7.50-20	8.25/20-10	Own 7RW	8-3 A x3	239.6	5.1	80	100-3800	3-2	49x3	9	N	Own 4UT	4	Own STH	Hy	H	**	7.2	Own 7RW	O4IHV	302	506	Co	TX	108	17.08x2.88x	LT
	F-7																																			
11	Cowl 9EQ-S1	2685	135	135	19000	5388	8.25/20-10	9.00/20-10	Own 8EQ	8-3 A x4	337.6	4.25	145-360	3-2	87x5	0	Y	Own 7EQ	5	Own SQ	Hy	H	**	7.2	Own 7EQ	O4IHV	350	583	Co	TX	61	66 9x3x	25	T
12	Cowl 9EJ-S1	2735	159	159	19000	5498	8.25/10-10	9.00/20-10	Own 8EQ	8-3 A x4	337.6	4.25	145-360	3-2	87x5	0	Y	Own 7AQ	5	Own SQ	Hy	H	**	7.2	Own 7EQ	O4IHV	350	583	Co	TX	85	66 9x3x	25	T
13	Cowl 9EJ-S3	2785	195	195	19000	5618	8.25/20-10	9.00/20-10	Own 8EQ	8-3 A x4	337.6	4.25	145-360	3-2	87x5	0	Y	Own 7EQ	5	Own SQ	Hy	H	**	7.2	Own 7EQ	O4IHV	350	583	Co	TX	121	1 9x3x	25	T
	F-8																																			
14	Cowl 9EQH-S1	3155	135	135	21500	5659	9.00-20	10.00-20-12	Own 8EQ	8-3 A x4	337.6	4.25	145-360	3-2	87x5	0	Y	Own 7EQH	5	Own SQH	SF	H	**	7.7	Own 7EQ	O4IHV	485	729	C	TX	61	66 9x3x	25	T
15	Cowl 9EQH-S4	3205	159	159	21500	5769	9.00-20	10.00-20-12	Own 8EQ	8-3 A x4	337.6	4.25	145-360	3-2	87x5	0	Y	Own 7EQH	5	Own SQH	SF	H	**	7.7	Own 7EQ	O4IHV	485	729	C	TX	85	66 9x3x	25	T
16	Cowl 9EJ-S4	3255	195	195	21500	5889	9.00-20	10.00-20-12	Own 8EQ	8-3 A x4	337.6	4.25	145-360	3-2	87x5	0	Y	Own 7EQH	5	Own SQH	SF	H	**	7.7	Own 7EQ	O4IHV	485	729	C	TX	121	1 9x3x	25	T
17																																				
18	Intern'l (2) KB-1	960	113	125	4400	2250	6.00-16	6.00-16-4	7.00/16	Own GRD214	6-3 A x4	213.6	3.16	82-3400	4-2	3 x3		N	Own H10S-B	5	Own R1050	St	H	3.72-5.11	Own F50	L41H	164	316	e	FX	38	6x2	T
19	KB-1M	875	102	113	4600	2150	6.00-16	6.00-16-4	6.50-16	Own GRD214	6-3 A x4	213.6	3.16	82-3400	4-2	3 x3		N	O 8A-H10S-B	5	Own R1050	St	H	3.72-5.11	Own F150	L41H	164	316	e	FX		6	T
20	KB-2	1010	125	125	5200	2286	6.00-16	6.00-16-4	7.00/16-6	Own GRD214	6-3 A x4	213.6	3.16	82-3400	4-2	3 x3		N	Own H10S-B	5	Own R1050	St	H	3.72-5.11	Own F50	L41H	164	316	e	FX	50	6 x2	T
21	KB-3	1150	130		6650	3000	7.00-16	6.00-16-6	7.50-16-6	Own GRD214	6-3 A x4	213.6	3.16	82-3400	4-2	3 x3		N	Own H10S-B	5	Own R1150	SF	H	4.22-5.28	Own F150	L41H	195	367	e	FX	55	6 x2	T
22	KB-3M	1040	102	113	7000	2584	7.00-16	7.00-16-6	7.50-16-8	Own GRD214	6-3 A x4	213.6	3.16	82-3400	4-2	3 x3		N	Own H41B	5	Own R1150	SF	H	4.22-5.28	Own F150	L41H	221	367	e	FX		6	T
23	(a) KB-5	1520	135	177	15000	3705	8.25/20	8.25/20	O-GRD 233	6-3 A x4	233.6	3.15	93-3400	4-2	3 x3		N	Own H41B	5	Own R1360	SF	H	5.28-7.16	Own F350	LH41H	294	509	e	FX	60	8 x3	T
24	(a) KB-6	1775	134	176	15900	4623	7.00/20	8.25/20	Own BLD250	6-3 A x4	251.6	3.20	100-3200	4-2	3 x3		N	Own WT97A	5	Own R1560	SF	H	5.62-7.16	Own 16F470	LH41HV	305	539	e	FX	60	8 x3	T
25	(a) KB-7	2340	134	176	18000	5055	7.50-20	9.00/20	O-BLD 260	6-3 A x4	269.6	3.22	100-3000	4-2	7 x4		N	Own F51	5	Own R1560	SF	H	6.50-7.16	Own F470	LH41HV	368	633	e	FX	60	8 x3	T
26	(a) KB-8	3400	137	197	22000	6580	9.00-20	10.00/21	O-RED 361	6-4 A x4	361.6	3.28	126-3000	7-3	4 x4		N	Own F61	5	Own R1572	SF	H	6.43-8.51	Own F553	LH41HV	407	709	e	FX	60	8 x3	T
27	(a) KB-10	4150	149	197	25000	7405	10.00-20	11.00-24	Own RED401	6-4 A x5	401.6	3.33	140-2800	7-3	4 x4		N	Own F62	5	Own R1572	SF	H	6.43-8.51	Own F653	LH41HV	414	729	e	FX	72	8 x3	T
28	(a) KB-11	5600	149	197	30000	8430	10.00-20	12.00-24	O-RED 450	6-4 x5	450.6	3.36	148-2600	7-3	4 x4		Y	Own F64	5	Own R100	Hy	H	6.42-8.05	Own F750	WW41A	746	1030	G	FX	72	10 3	T
29	(a) KB-12	6550	155	215	31500	9175	11.00-20	12.00-20	O-Con. R6586	6-4 A x5	586.6	4.17	200-2600	7-3	4 x4		Y	Own F65	5	Own R100	Hy	H	** -6	4.2	Own F750	BW41A	746		G	8	FX	66	10x3	C
30	KB-12 (a)	7140	161	215	35000	10100	11.00-20	12.00-24	O-Con. R6586	6-4 A x5	586.6	4.17	200-2600	7-3	4 x4		Y	Own F65B	5	Own U200P	2F	H	7.69-11.36	Own F750	BW41A	746		G	8	FX	72	10x3	L
31	W-5042-1	9900	179	227	40000	12530	10.00-20	11.00-22	Cum HB600	6-5 A x5	672	17	554	254-2600	7-3	4 x5		Y	8spl 7741	4	Own R-100	Hy	H	** -6	4.2	Own 86303	BW41A	604		G		FX	84	10x3	C
32	W-4042-OH	11250	170	230	40000	13115	10.00-20	14.00-24	Cum HB600	6-4 x6	672	17	492	150-1800	7-4	5 x		Y	8spl 7741	4	Tim 79750PA	2F	H	7.69-11.36	Own 82F	BW41A	656		G		FX	72	10x3	C
33																																				
	School Buses																																			
34	KB-5	1440	195		15000	3935	6.50-20	8.25-20	Own GRD233	6-3 A x4	233.6	3.18	93-3400	4-2	3 x3		N	Own H41B	5	Own R1360	SF	H	5.28-7.16	Own F350	LH41H	294	509	C	FX		8	T
35	KB-6	1900	194	212	17000	4910	7.00-20	8.25-20	Own BLD250	6-3 A x4	251.6	3.20	100-3200	4-2	3 x3		N	Own WT97	5	Own R1560	SF	H	5.62-7.16	Own F470	LH41HV	305	539	C	FX		8	T
36	KB-7	2525	212	248	18000	5770	7.50-20	9.00-20	Own BLD260	6-3 A x4	269.6	3.22	100-3000	4-2	7 x4		N	Own F51	5	Own R1560	SF	H	6.50-7.16	Own F470	LH41HV	368	633	C	FX		9	T
37	KB-8	3675	230	251	22000	6990	9.00-20	10.00-20	Own RED361	6-4 A x4	361.6	3.28	126-3000	7-3	4 x4		N	Own F61	5	Own R1572	SF	H	6.43-8.51	Own F553	LH41HV	407	709	C	FX		8	T
38	Kenworth(D) 521			161	215	35000	12200	10.00-20	11.00-22	Cum HB6	6-4 x6	672	17	500	150-1800	7-4	5 x16		Y	BL 8241	4	Tim U200P	DR	H	6.42-7.84	Tim 36000TW	Wa41A	752	1050	a	TD	72	9	C
39	585			150	215	30000	10130	10.00-20	11.00-22	Cu LO525	6-4 x5	525	5	385	150-2200	7-3	4 x		Y	Fu 5A620		Tim U200P			6.14	Tim 36000TW	Wa41A	752		a		70	9	C
40	Linn L-2			120		9000	6000	7.50-20	8.25/20	Her QXC3	6-3 x4	221		159	77-3200	7-1	8 x10		N	WGT9		4 Own 600	N	N	None	Tim F30U28H	L41H	306	478	a	T		None		
41	L-4			156		9200	6200	7.50-20	8.25/20	Her QXC3	6-3 x4	221		159	77-3200	7-1	8 x10		N	WGT9		4 Own 600	N	N	None	Tim F30U28H	L41H	306	478	a	N		None		
42	L-6			169		12700	7700	7.50-20	8.25/20	Her JXE3	6-3 x4	245.6	5.1	84	91-3200	7-2	5 x10		N	WGT9		4 Own 600T	N	N	None	Tim F30H28H	L61H	486	744	a	N		None		
43	L-8			205		12900	7900	7.50-20	8.25/20	Her JXE3	6-3 x4	245.6	5.1	84	91-3200	7-2	5 x10		N	WGT9		4 Own 600T	N	N	None	Tim F30H28H	L61H	486	744	a	N		None		
44	Mar Her DVL-4			90	118	16750		7.50-16	8.25/18	Willys MB	4-3 x4	134.6	6.48	105	60-4000	3-2	3.33	5.48	Y	Own		3 (Front Drive)			7.10	Own	4IH	202	327	M2			None		
45	Peterbilt(D) 280DD			175	Opt	35000	12500	10.00-20	11.00-22	Cum HB600	6-4 x6	672	17	500	150-1800	7-4	5 x16		Y	Spl 8041	12	U-200P	2F	R	** -6	4.2	Tim 36000W	Wa41A	738	1052		TD	86	10	C
46	Reo D-19XA			125	125	8000	4340	7.00	208	8.25	208	Own GC 245	6-3 x4	245.6	2.192	89-3100	7-2	5 x10	7	Y	WG T97	4	Tim 53547	SF	H	5.66-6.67	Tim 30000	T41H	310	482	var	TX	60	8	T
47	D-19A			125	125	14000	4740	7.50	20	8.25	20	Own GC 245	6-3 x4	245.6	2.192	89-3100	7-2	5 x10	7	Y	WG T97	4	T-E100-E300	HF	H	5.28-6.8	Tim 30000	T41VH	310	482	var	TX	60	8	T
48	D-19B			125	125	14000	5520	7.50	20	8.25	20	Own GC 245	6-3 x4	245.6	2.192	89-3100	7-2	5 x10	7	Y	WG T97	4	T-E300	HF	H	13-8	Tim 30000	T41VH	310	482	var	TX	60	8	T
49	D-19B			150	150	14000	4900	7.50	20	8.25	20	Own GC 245	6-3 x4	245.6	2.192	89-3100	7-2	5 x10	7	Y	WG T97	4	T-E300-E300	HF	H	5.28-6.8	Tim 30000	T41VH	310	482	var	TX	60	8	T
50	D-19ZA			125	188	15200	4740	7.50	20	8.25	20	Own GC245	6-3 x4	245.6	2.192	89-3100	7-2	5 x10	7	Y	WG T97	4	T-E100-E300	HF	H	5.28-6.67	Tim 31000	T41VH	310	482	var	TX	60	8	T
51	D-19F			165	165	14000	4900	7.50	20	8.25	20	Own GC 245	6-3 x4	245.6	2.192	89-3100	7-2	5 x10	7	Y	WG T97	4	T-E100-E300	HF	H	5.28-6.8	Tim 30000	T41VH	310	482	var	TX	84	8	T
52	D-19L			187	187	14000	5080	8.25	20	8.25	20	Own GC 245	6-3 x4	245.6	2.192	89-3100	7-2	5 x10	7	Y	WG T97	4	T-E100-E300	HF	H	5.28-6.8	Tim 30000	T41VH	310	482	var	TX	100	8	T
53	D-21A			125	125	15500	4920	7.50	20	8.25	20	Own GC 288	6-3 x5	288.6	2.225	96-3000	7-2	5 x10	7	Y	WG T97	4	Tim E100	HF	H	5.28-6.8	Tim 31013	T41VH	310	482	var	TX	60	8	T
54	D-21T			125	125	15500	5380	8.25	20	8.25	20	Own GC 288	6-3 x5	288.6	2.225	96-3000	7-2	5 x10	7	Y	WG T97	4	Tim E300	HF	H	13-8.10	Tim 31013	T41VH	310	482	var	TX	60	8	T
55	D-21B			150	150	15500	5230	8.25	20	8.25	20	Own GC 288	6-3 x5	288.6	2.225	96-3000	7-2	5 x10	7	Y	WG T97	4	T-E100-E300	HF	H	5.28-6.8	Tim 31013	T41VH	310	482	var	TX	85	9	T
56	D-21C			165	165	15500	5270	8.25	20	8.25	20	Own GC 288	6-3 x5	288.6	2.225	96-3000	7-2	5 x10	7	Y	WG T97	4	Tim E100	HF	H	5.28-6.8	Tim 31013	T41VH	310	482	var	TX	120	9	T
57	D-21R-A			130	130	18000	6040	9.00	20	9.00	20	Own GC 310	6-3 x5	310.6	2.243	101-3000	7-2	5 x10	7	Y	Cla 205V-VO	5	Tim H200-300	HFd	H	7.3*	Tim 31104	T41VH	344	584	var	TX	65	9	T
58	D-21R-T			130	130	18000	6380	9.00	20	9.00	20	Own GC 310	6-3 x5	310.6	2.243	101-3000	7-2	5 x10	7	Y	Cla 205V-VO	5	Tim H300	HFd	H	5.95-7.3	Tim 31104	T41VH	344	584	var	TX	65	9	T
59	D-21R-B			150	150	18000	6080	9.00	20	9.00	20	Own GC 310	6-3 x5	310.6	2.243	101-3000	7-2	5 x10	7	Y	Cla 205V-VO	5	Tim H100-300	HFd	H	6-16-6	Tim 31104	T41VH	344	584	var	TX	85	9	T
60	D-21R-C			165	165	18000	6180	9.00	20	9.00	20	Own GC 310	6-3 x5	310.6	2.243	101-3000	7-2	5 x10	7	Y	Cla 205V-VO	5	Tim H100-300	HFd	H	6-16-6	Tim 31104	T41VH	344	584	var	TX	100	9	T
61	D-21R-1			185	185	18000	6430	9.00	20	9.00	20	Own GC 310	6-3 x5	310.6	2.243	101-3000	7-2	5 x10	7	Y	Cla 205V-VO	5	Tim H100-300	HFd	H	6-16-6	Tim 31104	T41VH	344	584	var	TX	120	9	T
62	D-22A			130	130	20500	6220	9.00	20	9.00	20	Own GC 310H	6-3 x5	310.6	2.243	104-3000	7-2	5 x10	7	Y	Cla 205V-VO	5	Tim H300	HFd	H	5.95-7.3	Tim 31104	T41VH	370	640	var	TX	65	9	T
63	D-22T			130	130	20500	6630	9.00	20	9.00	20	Own GC 310H	6-3 x5	310.6	2.243	104-3000	7-2	5 x10	7	Y	Cla 205V-VO	5	Tim H300	HFd	H	5.95-7.3	Tim 31104	T41VH	370	640	var	TX	65	9	T
64	D-22B			150	150	20500	6140	9.00	20	9.00	20	Own GC 310H	6-3 x5	310.6	2.243	104-3000	7-2	5 x10	7	Y	Cla 205V-VO	5	Tim H Series	HFd	H	6-16-7.3	Tim 31104	T41VH	370	640	var	TX	85	9	T
65	D-22I			165	165	20500	6380	9.00	20	9.00	20	Own GC 310H	6-3 x5	310.6	2.243	104-3000	7-2	5 x10	7	Y	Cla 205V-VO	5	Tim H Series	HFd	H	6-16-6	Tim 31104	T41VH	370	640	var	TX	100	9	T
66	D-22L			185	185	20500	6430	9.00	20	9.00	20	Own GC 310H	6-3 x5	310.6	2.243	104-3000	7-2	5 x10	7	Y	Cla 205V-VO	5	Tim H100-300	HFd	H	6-16-6	Tim 31104	T41VH	370	640	var	TX	120	9	T
67	D-22R-B			150	150	20500	6480	9.00	20	9.00	20	Own GC 310H	6-3 x5	310.6	2.243	104-3000	7-2	5 x10	7	Y	Cla 205V-VO	5	Tim L100-200	HF	H	5.28-6.22	Tim 32500	T41VH	514	644	var	TX	85	9	T
68	D-23T			130	130	23000	8000	10.00	20	10.00	20	Con T-6427	6-4 A x4	427.6	0.335	146-2800	7-2	5 x13	6	Y	Cla 270V-VO	5	Tim L100-300	HFd	H	5.28-6.16*	Tim 32500	Wa41A	514	644	var	TX	85	9	T
69	D-23L			185	185	23000	7800	10.00	20	10.00	20	Con T-6427	6-4 A x4	427.6	0.335	146-2800	7-2	5 x13	6	Y	Cla 270V-VO	5	Tim L100	HF	H	5.28-6.16	Tim 32500	Wa41A	514	644	var	TX	120	9	T

▲—Includes Cab
•—2-Speed Axle Available

▼—Lockheed Type Front and Timken Dual Primary Rear Brakes
$—$200 for 8.25/18 tires

●—Reinforcement 6 5⅞x2 21x 125 extended to include front spring rear brackets and rear spring front bracket.
†—Reinforcements 8 .5x2 56x 15 extend from front spring rear brackets to rear spring front brackets.

For page on which Directory of Manufacturers appears, see Table of Contents page 65

Line Number	MAKE AND MODEL	Chassis List Price	WHEEL-BASE: Minimum Standard	WHEEL-BASE: Maximum Standard	Gross Vehicle Weight for Normal Service	Chassis Weight (See definition)	TIRE SIZES (D-dual rear, S-single rear): Standard Front and Rear	TIRE SIZES: Maximum Available Tire Size (Duals unless noted)	ENGINE DETAILS: Make and Model	No. of Cylinders, Bore and Stroke	Displacement	Comp. Ratio	Torque @ R. P. M.	Max. Brake H.P. @ R.P.M. Given	Main Bearings: Number	Main Bearings: Diameter	Main Bearings: Length	TRANS-MISSION: Governor Standard	REAR AXLE: Make and Model	REAR AXLE: Forward Speeds	REAR AXLE: Gear and Type	REAR AXLE: Drive & Torque	REAR AXLE: Gear Ratio Range in High	FRONT AXLE: Make and Model	BRAKES: SERVICE: Make	BRAKES: SERVICE: Location	BRAKES: SERVICE: Type Operation	BRAKES: SERVICE: Lining Area	BRAKES: SERVICE: Drum Area	BRAKES: SERVICE: Lining Material	BRAKES: Hand Location	BRAKES: Hand Type	FRAME: C-A Dimensions (Min. Std. W. B.)	FRAME: Side Rail Dimensions	FRAME: Type
	Rec. ext'l																																			
1	D-23S-A		130	130	24000	7150	9.00 20	10.00 20	Con T6371	6-4¼x4¼	371.6	5.29	231-1111	92-2600	7	2¼x13	6	Y	Ch La 270 VO	5	Tim 38500	HF	H	**	7.8	Tim 32500	T4IVH	370	644 var	TX	65½	9½x3½x¼	A	T
2	D-23S-T		130	130	25000	7150	9.00 20	10.00 20	Con T6371	6-4¼x4¼	371.6	5.29	231-1111	92-2600	7	2¼x13	6	Y	Ch La 270 VO	5	Tim 38500	HF	H	**	7.8	Tim 32500	T4IVH	370	644 var	TX	65½	9½x3½x¼	A	T
3	D-23S-B		130	130	25000	7150	9.00 20	10.00 20	Con T6371	6-4¼x4¼	371.6	5.29	231-1111	92-2600	7	2¼x13	6	Y	Ch La 270 VO	5	Tim 38500	HF	H	**	7.8	Tim 32500	T4IVH	370	644 var	TX	65½	9½x3½x¼	A	T
4	D-23S-C		165	165	25000	7350	9.00 20	10.00 20	Con T6371	6-4¼x4¼	371.6	5.29	231-1111	92-2600	7	2¼x13	6	Y	Ch La 270 VO	5	Tim 38500	HF	H	**	7.8	Tim 32500	T4IVH	370	644 var	TX	65½	9½x3½x¼	A	T
5	D-23S-I		185	185	25000	7680	9.00 20	10.00 20	Con T6371	6-4¼x4¼	371.6	5.29	231-1111	92-2600	7	2¼x13	6	Y	Ch La 270 VO	5	Tim 38500	HF	H	**	7.8	Tim 32500	T4IVH	370	644 var	TX	120½	9½x3½x¼	A	T†
6	D-23R-T		130	130	25000	8580	10.00 20	11.00 20	Con T-6427	6-4¼x4¼	427.6	5.35	146-2800	72-2800	7	2¾x13	6	Y	Ch La 270V-VO	5	Tim 42100-3100	HF	H	**	7.8½	Tim 35011	Ws41A	638	934 var	TX	65½	9½x3½x¼	A	T
7	D-23R-B		150	150	25000	8570	10.00 20	11.00 20	Con T-6427	6-4¼x4¼	427.6	5.35	146-2800	72-2800	7	2¾x13	6	Y	Ch La 270V-VO	5	Tim 4200	HF2	H	**	7.8½	Tim 35011	Ws41A	712	1038 var	TD	85½	9½x3½x¼	A	T
8	D-23R-BL		150	150	25000	9000	10.00 20	11.00 20	Con T-6427	6-4¼x4¼	427.6	5.35	146-2800	72-2800	7	2¾x13	6	Y	Ch La 270VOM	5	Tim 4200	HF2	H	**	7.8½	Tim 35011	Ws41A	712	1038 var	TD	85½	9½x3½x¼	A	T
9	D-23R-I		185	185	25000	8300	10.00 20	11.00 20	Con T-6427	6-4¼x4¼	427.6	5.35	146-2800	72-2800	7	2¾x13	6	Y	Ch La 270V-VO	5	Tim 42100-3100	HF2	H	**	7.8½	Tim 35011	Ws41A	638	934 var	TX	120½	9½x3½x¼	A	T†
10	30 A		6145	145	32000	11000	11.00 20	11.00 24	Con R-6513	6-4¼x5½	513.5	9.40	173-2800	73-2800	7	3¼x14	7	Y	Sp6252A-5¼	5	T+S6000-1200	HF4	H	**	7.08½	Tim 36000	Ws41A	722	1038 var	TI	67	10½x3½x¼	A	T
11	30 B		6165	165	32000	11750	11.00 20	11.00 24	Con R-6513	6-4¼x5½	513.5	9.40	173-2800	73-2800	7	3¼x14	7	Y	Sp6252A-5¼	5	T+S6000-1200	HF4	H	**	7.08½	Tim 36000	Ws41A	722	1038 var	TI	67	10½x3½x¼	A	T
12	31 A		6145	145	32000	11000	11.00 20	11.00 24	Con R-6602	6-4¼x5½	602.5	9.46	202-2800	73-2800	7	3¼x14	7	Y	Sp6252A-5¼	5	T+S6000-1200	HF4	H	**	7.08½	Tim 36000	Ws41A	722	1038 var	TI	67	10½x3½x¼	A	T
13	31 B		6165	165	32000	11750	11.00 20	11.00 24	Con R-6602	6-4¼x5½	602.5	9.46	202-2800	73-2800	7	3¼x14	7	Y	Sp6252A-5¼	5	T+S6000-1200	HF4	H	**	7.08½	Tim 36000	Ws41A	722	1038 var	TI	87	10½x3½x¾	T	
	School Buses																																			
14	C119-51		132	132			7.00 20	7.00 20	Own GC 245	6-3½x4½	245.6	5.02	85-3100	51-3100	7	2¼x10	7	Y	Fa 185F	4	Tim 33547	SF	H	6.67	Tim 30000	T4IVH	310	482 var	TX		9½x3½		T
15	C119L-51		138	138			7.50 20	7.50 20	Own GC 245	6-3½x4½	245.6	5.02	85-3100	51-3100	7	2¼x10	7	Y	Fa 185F	4	Tim 33547	SF	H	6.67	Tim 31013	T4IVH	310	482 var	TX		9½3½		T
16	C119LS-49		206	206			7.50 20	7.50 20	Own GC 245	6-3½x4½	245.6	5.02	85-3100	51-3100	7	2¼x10	7	Y	WG T97	4	Tim 33547	SF	H	6.67	Tim 31013	T4IVH	310	482 var	TX		9½3½		T
17	C121-49		206	206			8.25 20	8.25 20	Own GC 288	6-3½x4½	288.6	5.02	98-3000	59-3000	7	2¼x10	7	Y	Ch La 231F	4	Tim E100	HyF	H	6.50	Tim31104	T4IVH	314	532 var	TX		9½x3½x¼	A	T
18	C121S-53		224	224			8.25 20	8.25 20	Own GC 288	6-3½x4½	288.6	5.02	98-3000	59-3000	7	2¼x10	7	Y	WG T97	4	Tim E100	HyF	H	6.50	Tim31104	T4IVH	314	532 var	TX		9½x3½x¼	A	T
19	C125-53		224	224			9.00 20	9.00 20	Own GC 310	6-3½x5	310.6	5.02	106-3000	64-3000	7	2¼x10	7	Y	Ch La 231F	4	Tim H100	HyF	H	7.2	Tim31104	T4IVH	314	584 var	TX		9½x3½x¼	A	T
20	C-122-L		252	252			9.00 20	9.00 20	Own GC 310	6-3½x5	310.6	5.02	106-3000	64-3000	7	2¼x10	7	Y	Ch 231F	4	Tim H100	HyF	H	7.2	Tim 32500	T4IVH	344	588 var	TX		9½x3½x¾	A	T
21	Sterling H1105		148	175	24000	9150	9.00 20	11.00 20	Way 6MZA	6-4¼x4¼	404.5	6.20	130-3000	72-2600	7	2¼x12	7	Y	Fu 5A43	5	Tim Q1001PTO	HFy	H	5.29-7.80	Tim 35011H	T4IHV	521	926 A	TX	67	9x7¼	A	
22	H1105		148	175	24000	9650	10.00 20	11.00 22	Way 6MZA	6-4¼x4¼	404.5	6.20	130-3000	72-2600	7	2¼x12	7	Y	Fu 5A43	5	Tim R1001PTO	HFy	H	5.29-7.80	Tim 35011H	T4IHV	521	926 A	TX	67	9x7¼	A	
23	H1105		148	175	32000	10650	10.00 20	11.00 24	Way 6SRKR	6-4¼x5½	517.3	5.96	125-2200	84-2200	7	3¼13¼	7	Y	Fu 5A62	5	Tim 8200P	2F	H	6.42-9.83	Tim 39000TW	Ws41A	722	1054 A	TX	67	9x3½x¾	A	
24	H1105		148	175	36000	11250	11.00 20	12.00 24	Way 6SRKR	6-4¼x5½	517.3	5.96	125-2200	84-2200	7	3¼13¼	7	Y	Fu 5A62	5	Tim 7972TW	2F	H	7.69-11.36	Tim 39000TW	Ws41A	670	1118 A	TX	67	9x3½x¾	A	
25 (D)	HD1105H		158	185	36000	12500	11.00 20	12.00 24	Cum HB600	6-4¼x5½	672.17	5.00	150-1800	74-1800	4	4½x16½	5	Y	Fu 4B86	4	Tim 8200P	2F	H	6.42-9.83	Tim 39000TW	Ws41A	722	1054 A	TX	68	9x3½x¾	A	
26 (D)	HD1145H		158	185	36000	12500	11.00 20	12.00 24	Cum HB600	6-4¼x5½	672.17	5.00	150-1800	74-1800	4	4½x16½	5	Y	Fu 4B86	4	Tim 7972TW	2F	H	7.69-11.36	Tim 39000TW	Ws41A	670	1118 A	TX	68	9x3½x¾	A	
27	H1705		148	175	24000	9200	9.00 20	11.00 20	Way 6MZA	6-4¼x4¼	404.5	6.20	130-3000	72-2600	7	2¼x12	7	Y	Fu 5A43	5	Tim 97H	CD	R6.70-10.52	Tim 35011H	T4IHV	518	852 A	TX	67	9x3½x¾	A	
28	HC110		148	175	28000	9700	10.00 20	11.00 22	Way 6MZA	6-4¼x4¼	404.5	6.20	130-3000	72-2600	7	2¼x12	7	Y	Fu 5A43	5	150mm 137W	CD	R6.70-10.52	Tim 35011H	T4-IHV	540	842 A	TX	67	9x3¼x¾	A	
29	HC115		148	175	32000	10150	10.00 20	11.00 24	Way 6SRKR	6-4¼x5½	517.3	5.96	125-2200	84-2200	7	3¼13¼	7	Y	Fu 5A62	5	150mm 137W	CD	R6.70-10.52	Tim 39000TW	Ws41A	648	1064 A	TX	67	9¼x3½x¾	A	
30	HC140		148	178	36000	11250	10.00 20	12.00 24	Way 6SRKR	6-4¼x5½	517.3	5.96	125-2200	84-2200	7	3¼13¼	7	Y	Fu 5A62	5	150mm 148W	CD	R6.70-10.52	Tim 39000TW	Ws41A	708	1102 A	TX	67	9¼x3½x¾	A	
31	HC145		148	178	36000	11500	10.00 22	12.00 24	Way 6SRKR	6-4¼x5½	517.3	5.96	125-2200	84-2200	7	3¼13¼	7	Y	Fu 5A62	5	150mm 147W	CD	R6.70-10.52	Tim 39000TW	Ws41A	708	1102 A	TX	67	9¼x3½x¾	A	
32	HC175		167	187	32000	10150	10.00 24†	11.00 24†	Cum HB600	6-4¼x6	672.17	5.00	150-1800	74-1800	4	4½x16½	5	Y	Fu 4B86●	4	150mm 137W	CD	R7.31-12.42	Tim 27454W	Ws41A	708	1212 A	TX	67	9¼x3½x¾	A	
33	HC250		178	190	60000	18400	11.00 24†	14.00 24†	Cum H45GK	6-4¼x6	672.17	5.00	150-1800	74-1800	4	4½x16½	5	Y	Fu 4B86●	4	150mm 251W	CD	R7.31-12.42	Tim 27454W	Ws41A	708	1212 A	TX	67	9¼x3½x¾	A	
34 (D)	HC115H		167	187	32000	12250	10.00 20	11.00 24	Cum HB600	6-4¼x6	672.17	5.00	150-1800	74-1800	4	4½x16½	5	Y	Fu 4B86●	4	150mm 137W	CD	R6.70-10.52	Tim 39000TW	Ws41A	648	1064 A	TX	77	9x3¼x¾	A	
35 (D)	HC145H		167	187	36000	13000	10.00 24†	12.00 24†	Cum HB600	6-4¼x6	672.17	5.00	150-1800	74-1800	4	4½x16½	5	Y	Fu 4B86●	4	150mm 147W	CD	R7.31-12.42	Tim 27454W	Ws41A	708	1212 A	TX	77	9¼x3½x¾	A	
36 (D)	HC250H		178	190	60000	18700	11.00 24†	14.00 24†	Cum HBD600	6-4¼x6	672.17	5.00	150-1800	74-1800	4	4½x16½	5	Y	Fu 4B86●	4	150mm 251W	CD	R7.31-12.42	Tim 27454W	Ws41A	786	1212 A	TX	95	21x3½x¾	A1	
37	Studebaker 2R5	1022	112	112	4600	2125	6.00 18	6.50 18	Own 1R	6-3x4	170.6	5.13	48-4000	40-4000	4	2½x5½	5	N	Own 673519	3	Own 673874	Hy	H	**	4.82	Own 677574	Wg41H	170	276 CO	21	40	7x2¼x¾	T	
38	2R10	1088	122	122	6100	2400	6.50 18	7.50 18	Own 2R	6-3x4	170.6	5.13	48-4000	40-4000	4	2½x5½	5	N	Own 673539	3	Own 677539	SF	H	5.57-4.86	Own 677574	Wg41H	198	314 CO	21	50	7½x2¾x¾	T	
39	2R15 21	1236	121	121	7800	3085	7.00 18	7.00 20	Own 2R	6-3x4	170.6	5.13	48-4000	40-4000	4	2½x5½	5	N	Own 676944	3	Own 677768	SF	H	5.83-6.66	Own 677091	LH41H	216	342 Ce	TX	60	9¼x2¼x¾	A	
40	2R15 31	1255	131	131	10000	3085	7.00 18	7.00 20	Own 2R	6-3x4	170.6	5.13	48-4000	40-4000	4	2½x5½	5	N	Own 676944	3	Own 677768	SF	H	5.83-6.66	Own 677091	LH41H	216	342 Ce	TX	60	9¼x3½x¾	A	
41	2R17	1426	131	195	14000	3695	6.50 20	8.25 20	Own 3R	6-3¾x4	234.6	5.20	108-3100	61-3100	4	2½x5½	5	N	Own 678790	3	Own 678790	HF	H	6.66-5.66	Own 677091	LH41H	280	442 Ce	TX	60	9¼x3½x¾	A	
42	2R17A	1627	131	195	16000	4180	7.50 20	8.25 20	Own 3R	6-3¾x4	234.6	5.20	108-3100	61-3100	4	2½x5½	5	N	Own 678791	3	Own 675571	Hy	H	6.80	Own 677091	LH41H	280	442 Ce	TX	60	9¼x3½x¾	A	P
43	Ward La Fr D-1		139	220	25000	9300	10.00 20	11.00 20	Con T6427	6-4¼x4¼	427.6	5.35	146-2800	72-2800	7	2¾x13	6	Y	Fu 7A430	5	Tim Q 100	B	R	**	8.83	Tim 35017TW	Ws4A	600	928 C	TM	68¼	9½x3½x¼		
44	D-1C		149	220	29000	9300	11.00 20	11.00 22	Con T6427	6-4¼x4¼	427.6	5.35	146-2800	72-2800	7	2¾x13	6	Y	Fu 7A430	5	Tim S-200	SF	R	**	7.08	Tim 35017TW	Ws41A	623	1031 C	TM	68¼	10x3½x¼		
45	D-2K		149	220	29000	10000	11.00 20	11.00 22	Way 140GK	6-4¼x5½	513.5	9.40	173-2800	73-2800	7	3¼x14	7	Y	Fu 5A630	5	Tim S-200	SF	R	**	7.83	Tim 35017TW	Ws41A	673	1031 C	TM	68¼	10x3½x¼		
46	D-2Z		149	220	29000	10000	11.00 20	11.00 20	Way 140GZ	6-4¼x5½	513.5	9.40	173-2800	73-2800	7	3¼x14	7	Y	Fu 5C630	5	Tim S-200	SF	R	**	7.83	Tim 35017TW	Ws41A	673	1031 C	TM	68¼	10x3½x¼		
47	D-3		149	220	29000	10000	11.00 20	11.00 22	Con R-6513	6-4¼x5½	513.5	9.40	173-2800	73-2800	7	3¼x14	7	Y	Fu 5C630	5	Tim S-200	SF	R	**	7.83	Tim 35017TW	Ws41A	673	1031 C	TM	68¼	10x3½x¼		
48	D-3S		149	220	29000	10000	11.00 20	11.00 22	Con R-6602	6-4¼x5½	602.5	9.46	173-2800	73-2800	7	3¼x14	7	Y	Fu 5C630	5	Tim S-200	SF	R	**	7.83	Tim 35017TW	Ws41A	673	1031 C	TM	68¼	10x3½x¼		
49	D-5		149	220	34000	12500	11.00 22	11.00 22	Cum HB600	6-4¼x6	672.17	5.00	150-1800	74-1800	4	4½x16½	5	Y	Fu U-200	5	Tim U-200	SF	R	**	8.42	Tim 27463	Ws4B	681	1041 C	TM	68¼	10x3½x¼	A	
50	Willys 4 (4d Del)	1463	1450*	101	101	4000	*2775	6.50	16-5	Own 463	4-3½x4½	134.6	5.10	53-4000	30-4000	3	2¼x18	N	Wi Tr6	3	85hp 23-1	Hy	H	4.88	5.38	Own 1 Tr	B41H	133	220 a	21		5x21¼x.063	TF1●	
51	Willys 2WD		1425*	118	118	5300	*2788	6.50	16	8	7.00 16	Own 2WD	4-3½x4½	134.6	5.10	53-4000	30-4000	3	2¼x18	N	Wi T90E	3	Tim 51340NX	4.81	H	5.38-6.17	Cla F-154	B41H	176	276 a	21	42	28	5½x28	A	TF1●
	Four-Wheel-Drive																																			
52	Corbitt 22FG		139	Opt.	22000		7.00 20	10.00 20	Con R6371	6-4¼x4½	371.6	6.38	150-1000	76-2600	7	2¼x13½	7	Y	Fu 5A43	5	Tim R2090H	2F	H	**	8.43	Tim F2090H	L41HV		868 a	TD	74	9¾x¾		DL
53	Dodge B-1-F-W		129	126	8700		7.50 16-8	9.00 16-8	Dwn T-137	6-3½x4½	230.6	7.85	91-3200	72-3200	4	2¼x1	8	Y	NP-3S580	4	Dwn T-137	HyF	H	4.8	5.8	Dwn T-137	O41H	210	311 e	TX	52	8 x2 A	8½	C
54	FWD HA		132	168	17000	▲2470	8.25-20	10.00 20	Way BZ	6-4x4½	320.5	9.22	104-3000	72-2800	7	2¾x10¼	7	Y	Own H	5	Own H	SF	H	6.6-9.01	Own H	L41HV	391	807 a	T4	79½	9x3½		T
55	HR		132	168	20000	▲3000	9.00 20	10.00 20	Way MZA	6-4¼x4¼	404.5	6.20	129-2800	72-2600	7	2¼x12½	7	Y	Own H	5	Own H	SF	H	6.6-9.01	Own H	L41HV	391	807 a	T4	79½	9x3½		T
56	HG		154	154	20000	▲3030	9.00 20	10.00 20	Way MZA	6-4¼x4¼	404.5	6.20	129-2800	72-2600	7	2¼x12½	7	Y	Own H	5	Own H	SF	H	6.6-9.01	Own H	L41HV	391	807 a	T4	89½	7 A x3½		C
57	SU		150	182	28000	▲3670	11.00 20D	11.00 20	Way 8SRKR	6-4¼x5½	517.5	5.96	129-2400	73-2400	7	3¼13¼	7	Y	Own U	10	F	6.7-9.8	Own U	L41HV	512	867 a	T4	90	8 A x3½		C
58	VU		150	182	30000	▲3770	11.00 20D	11.00 20	Way 140GK	6-4¼x5½	513.5	9.40	173-2800	73-2800	7	3¼x14	7	Y	Own VU	5	Own VU	SF	H	6.79-12.59	Own VU	L41HV	517	814 a	T4	90	10 A x3½		C
59	ZU		150	182	33000	12540	11.00 20D	11.00 20	Way 140GZ	6-4¼x5½	554.6	4.46	188-2600	73-3¼x13¼	H	Y	Own S	5	Own ZU	SF	H	6.79-12.59	Own ZU	L41HV	640	1106 a	T4	90	10 A x3½	H	C
60	M7		150	180	38000	▲5400	12.00 20D	12.00 20	Way 145GK	6-5¼x6	779.6	2.58	186-2000	73-3½x17¼	A	Y	Own M	10	Tim 1755	2F	H	**	7.33	Wis F409	Ws41A	584	976 a	T4	90	10 A x3½	H	C
61 (D)	MD7		150	180	38000	▲5700	12.00 20D	12.00 24	Bu DC841	6-5¼x6	841.6	2.65	210-2000	78-2000	7	3¾x17¼	A	Y	Own M	10	Tim 1755	2F	H	**	7.33	Wis F409	Ws41A	584	976 a	T4	90	10 A x3½	H	C
62	M10		150	180	44000	▲5800	11.00 24D	12.00 24	Way 145GK	6-5¼x6	779.6	2.58	186-2000	73-3½x17¼	A	Y	Own M	10	Tim 79721	2F	H	**	7.7	Wis F409	Ws41A	614	1030 a	T4	90	10 A x3½	H	C
63 (D)	M10D		150	180	44000	▲6300	11.00 24D	12.00 24	Bu DC841	6-5¼x6	841.6	2.65	210-2000	78-2000	7	3¾x17¼	A	Y	Own M	10	Tim 79721	2F	H	**	7.7	Wis F409	Ws41A	614	1030 a	T4	90	10 A x3½	H	C
64	Marmon-Herr MH410-4		158	170	24000	▲5800	9.00 20D	10.00 20	Her WX1C3	6-4¼x4¼	404.5	4.29	118-2800	72-2800	7	2¾x13½	7	Y	Fu 5A430	5	Own 1121	2B	H	**	8.43	Own 121	W	A	584	887 e	F	72	9 H x3½		T
65	MH555-4		161	174	30000	▲7150	10.00 20D	11.00 20	Her RXC	6-4½x5½	526.6	3.90	131-2200	78-2200	7	3¾13¼	7	Y	Fu 5A620	5	Own 1122	2B	H	**	8.43	15 Own 122	W	A	692	1039 e	F	72	10 A x3½	A	T
66 (C)	R5-4		134	134	15500	▲5847	7.50 20D	7.50 20	Ford	8-3⅛x3¾	279.6	4.15	100-3000	58-3000	5	2¼x8	7	N	Ford	4	Ford	SF	H	**	6.67	Own M5	F	H	303	563 a	F	60	7x2¾x¾		T
67 (C)	R6-4		158	158	15500	▲5977	7.50 20D	7.50 20	Ford	8-3⅛x3¾	279.6	4.15	100-3000	58-3000	5	2¼x8	7	N	Ford	4	Ford	SF	H	**	6.67	Own M5	F	H	303	563 a	F	84	7x2¾x¾		T
68 (C)	LD5F-4		114			▲5710	15*		Ford	8-3⅛x3¾	279.6	4.15	100-3000	58-3000	5	2¼x8	7	N	Ford	4	Ford	SF	H	**	4.11	Own O	F	H	162		A	F				N
69 (C)	LD7-4		114		5300	▲5901	15*		Ford	8-3⅛x3¾	279.6	4.15	100-3000	58-3000	5	2¼x8	7	N	Ford	4	Ford	SF	H	**	4.11	Own O	F	H	162		A	F	40	5 H x2¼	A	T

† Rear only: Front 11.00-24. ‡ Rear only. Front 9.00-16. ▼ Lockheed type front and Timken dual primary rear brakes. ▲ 8031 F-G Speer Transmission available.
▲ Includes Cab. ; Rear only. Front 12.00-24. ▼ 2 speed 6.33-8.10 optional. ▲ Complete Vehicle with pick-up type body. § Auxiliary Transmission Own OJ. ▲ Special W. B.'s available on request.
♦ Two speed axle available. ▼ 6731A Speer Auxiliary Transmission.

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CURRENT TRUCK SPECIFICATIONS—*Continued*

Line Number	MAKE AND MODEL	Chassis List Price	WHEEL-BASE: Minimum Standard	WHEEL-BASE: Maximum Standard	Gross Vehicle Weight for Normal Service	TIRE SIZES (D-dual rear, S-single rear): Chassis Weight See definition	Standard Front and Rear	Maximum Authorized Duals (or Duals in less noted)	ENGINE DETAILS: Make and Model	No. of Cylinders, Bore and Stroke	Displacement	Comp. Ratio	Torque lb. ft.	Max. Brake H.P. at R.P.M. Given	Main Bearings: Number	Main Bearings: Diameter and Length	TRANS-MISSION: Governor Standard	REAR AXLE: Make and Model	Forward Speeds	Gear and Type	Drive & Torque	Gear Ratio Range in High	FRONT AXLE: Make and Model	BRAKES: SERVICE: Make Location Type Operation	Lining Area	Drum Area	Drum Material	Hand Location Type	C.A Dimensions (Min. Std. W. B.)	FRAME: Side Rail Dimensions	Type
	Marmon, con't																														
1	(C) R3-4		122		6800	▲11007 50 17		7 50 17	Ford	8-3⅞x3¼	239.6	4	180	100-3800	3-2½x4	71	N Ford	4 Ford	S	H	** —4	80	Own I	F . . H	186	A	F	48	6x21/4 x A	T
2	(C) R4-4		134		10800	▲10907 00 20S		7 00 20	Ford	8-3⅞x3¼	239.6	4	180	100-3800	3-2½x4	71	N Ford	4 Ford	S	H	** —5	33	Own	F . . . H	303	563 A	F	60	7x2 3/4 x A	T
3	(C) R5-A-C O4-4	158	155	1506	15500	▲16007 50 20D	7.50 20		Ford	8-3⅞x3¼	239.6	4	180	100-3800	3-2½x4	71	N Ford	4 Ford	S	H	** —5	67	Own	F . . . H	303	563 A	F	60	7 08x2.88 1/4	T
4	(C) Q5-4		136		21500	▲21009 00 20	10 00 20		Ford	8-3 13/16x4 1/8	337.6	6	255	145-3600	3-2 1/8x5	21	Ford	5 Ford	H	H	—6	80	Own	F . . H	350	583 A	F	61	9x3x 1/4	T
5	(C) Q6-4		160		21500	▲23009 00 20	10 00 20		Ford	8-3 13/16x4 1/8	337.6	6	255	145-3600	3-2 1/8x5	21	Ford	5 Ford	H	H	—6	80	Own	F . . H	350	583 A	F	85	9x3x 1/4	T
6	Q7-4		196		21500	▲25009 00 20	10 00 20		Ford	8-3 13/16x4 1/8	337.6	6	255	145-3600	3-2 1/8x5	21	Ford	5 Ford	H	H	—6	80	Own	F . . H	350	583 A	F	85	9x3x 1/4	T
7	Oshkosh W-312		149	205	27000	●16200 10.00 20D	11.00 20		Her WXLCO3	6-4½x5½	403.6	5	312	139-2600	7-2¾x13½		Y Fu 5A43	10 Own W312	SF	H	** —6	8	Own W312	L41I	510	870 G	TX	82	8¼x33⅛	TF
8	W1700		150	205	29800	●17000 11.00 20D	12.00 20		Her RXC	6-4¾x5¼	529.5	4	370	131-2200	7-3x13¾		Y Fu 5A620	5 Own W1709	SF	H	** —6	4	Own 1700	L41H	570	980 G	TX	82	8¼x33⅛	TF
9	W-710		150	205	30000	●17000 11.00 20D	12.00 20		Her RXCO	6-4¾x5¼	529.5	4	370	131-2200	7-3x12¾		Y Fu 5A650	10 Own W700	2F	H	** —6	8	Own W700	L41H	630	975 G	TX	82	10¼x33x 5/8	TF
10	(D) W-703D		150	205	30000	●12700 11.00 20D	12.00 20		Her DRXC	6-4¾x5¼	529.5	5	398	147-2200	7-3½x13¼		Y Fu 5A650	10 Own W700	2F	H	** —6	8	Own W700	L41HA	630	975 G	TX	82	10¼x33x 5/8	TF
11	W-703		150	205	30000	●12700 11.00 20D	12.00 20		Her RXLD	6-4¼x5¼	476.5	4	430	150-2200	7-3½x13¼		Y Fu 5A650	10 Own W700	2F	H	** —6	8	Own W700	L41H	630	975 G	TX	82	10¼x33x 5/8	TF
12	W-705		150	205	30000	●12700 11.00 20D	12.00 20		Her RXLD	6-4¼x5¼	476.5	4	430	150-2200	7-3½x13¼		Y Fu 5A650	10 Own W700	2F	H	** —6	8	Own W700	L41H	630	975 G	TX	82	10¼x33x 5/8	TF
13	W-906		158	181	38000	●15600 12.00 20D	14.00 208		Cum HB600	6-5⅞x6	672		500	150-1800	7-4¼x16		Y Fu 4A86	12 Own W906	2F	H	** —6	2	Own W906	LT41WB	645	975 G	TX	90	12¼x33x 5/8	TF
14	W2200		160	181	40000	●16500 13.00 20D	14.00 208		Bu M0779	6-5¾x6	779		575	188-2100	7-3¾x17		Y Fu 4A86	12 Own W2200	2F	H	** —6	15	Own 2200	LT41A	645	975 G	TX	90	10¼x33½x 5/8	TF
15	W2201		160	181	40000	●15500 13.00 20D	14.00 208		Bu M0803	6-5¾x6	803		670	200-1800	7-3¾x17		Y Fu 4A86	12 Own W2201	2F	H	** —6	15	Own 2201	LT41A	645	975 G	TX	90	10¼x33½x 5/8	TF
16	(D) W2204		160	181	46000	●15500 13.00 20D	14.00 208		Bu tDCS41	6-5¾x6	844		695	180-1800	7-3¾x17		Y Fu 4A86	12 Own W2204	2F	H	** —6	4	Own 2204	LT41A	780	1190 G	TX	90	10¼x33½x 5/8	TF
17	W2205		160	181	54000	●19500 13.00 20D	14.00 24		Bu 6DCS844	6-5¾x6	1/2 844		740	240-2100	7-3¾x17		Y Fu5A920	10 Own W2205	2F	H	** —6	3	Own W2205	LT41A	780	1190 G	TX	90	10¼x33½x 5/8	LT
18	W2206		160	181	54000	●19000 13.00 24D	14.00 24		HS 800	6-5 x6	■	5	750	295-2000	7-3¼x14		Y Fu5A1120	10 Own W2206	2F	H	** —6	3	Own W2206	LT41A	780	1190 G	TX	90	10¼x33½x 5/8	LT
19	W2208		160	181	46000	17700 13.00 20D	14.00 24		Cum SH600	6-5⅞x6	748		585	200-2100	7-4¼x16½		Y Fu 4A86	12 Own W2208	2F	H	** —6	4	Own W2208	LT41A	780	1190 G	TX	90	10¼x33½x 5/8	TF
20	Sterling DD115		160	178	32000	11500 10.00 20	11.00 24		Wau 6SRKR	6-4⅝x5½	517.5	6	395	125-2250	7-3x13⅞		Y Fu 5A62▼	10 Tim 1357W	2F	H	6 32-8	6	Tim F3110W	Ws41A	644	984 A	TX	76	9x3¼x3¼	A
21	(D) DD145H		167	185	36000	13900 11.00 20	12.00 24		Cum HB600	6-4⅞x6	672	17	500	150-1800	7-4¼x16½		Y Fu 4B86▼	10 Tim 1758W	2F	H	7 33-10	3	Tim F409C W	Ws41A	644	984 A	TX	77	9¼x33½x3¼	A
22	Walter (c.f.) FN		126	150	20000	7500 9.00 20D	10.00 20	8.00 20	Wau MZA	6-4⅛x4⅝	404.5	6	290	125-2600	7-2⅝x12½		Y Own FN	6 Own FNB	2	H	6.0-8.0		Own FN	O41A	470	670 G	FI	84	7⅜2⅝x3¼	C
23	(c.f.) FZM		126	150	24000	8500 10.00 20D	12.00 20	8.00 20	Wau MZA	6-4⅛x4⅝	404.5	6	290	125-2600	7-2⅝x12½		Y Own FN	6 Own FMB	2	H	6.0-8.0		Own FJ	O41A	470	670 G	FI	84	12x3½x3½	B
24	(c.f.) FCK		126	138	30000	10500 10.00 24D	11.00 24	8.00 24	Wau SRKR	6-4⅜x5¼	517.5	6	365	125-2200	7-3x13¾		Y Own FC	6 Own FCB	2	H	7 5-9.0		Own FC	O41A	585	890 D	FI	84	13x3¾x3½	B
25	(c.f.) FC		138	162	32000	11000 11.00 24D	12.00 24	8.00 24	Wau SRKR	6-4⅜x5¼	517.5	5	365	125-2200	7-3x13¾		Y Own FC	6 Own FCB	2	H	7 5-9.0		Own FCR	O41A	585	890 D	FI	96	14x3¾x3½	B
26	(c.f.) FGB		126	162	32000	12000 11.00 24D	12.00 24	8.00 24	Wau 145GK	6-5¼x6	779.5	7	580	185-2000	7-3½x17¾		Y Own FA	6 Own FCB	2	H	7 5-9.0		Own FCR	O41A	585	890 D	FI	84	14x3¾x3½	B
27	(c.f.) FGR		162	162	42000	13000 11.00 24D	11.00 24		Wau 145GK	6-5¼x6	779.5	7	580	185-2000	7-3½x17¾		Y Own FA	6 Own FCR	2	H	7 5-9.0		Own FCR	O41A	585	890 D	FI	89	14x3¾x3½	B
28	Ward La Fr FD1				35000	●11500 11.00 22	11.00 22		Cont 6513	6-4½x5¼	513.5	9	405	180-2800			Ful 5A620	5 Tim R462W			** —8	15	Tim F3100W	BW41A		Co			10x3x	
29	(D) FD2				35000	●12000 11.00 24	11.00 24		Cum HB600	6-5⅛x6	672	17	500	150-1800			Ful 5A920	5 Tim R462W			** —8	15	Tim F3100W	BW41A		Co			10x3x	
30	Willys Jp. CJ-3A	1220*	80	80	3500	●21606 00 16		7 00/15	Own CJ-2A	4-3¼x4⅛	134.6	5	105	60-4000	3-2 3/8x5	48	N WG T90C	2▷ Spl 41-2	Hy	H	** —5	38	Spl 25	B41H	118	198 a	F		4x2 1/4 x A	P
31	4WD 1725*		118	118	5300	●29207 00 16			Own 4WD	4-3¼x4⅛	134.6	5	105	60-4000	3-2 3/8x5	48	Y WG T90A	2▷ Tim 1541 ONX	3	H	** —5	38	Spl 25	B41H	176	276 a	2I	42 28	5½x2x A	TD
	Six-Wheelers Wheels ▼ Driven																														
32	Dodge		154	190	34000		9.00 20	10.00 20	Own T159	6-3½x5	331.6	5	270	128-3000	7-3x11 2		Y NP 8845O	5 Tim SBD1555	HyF		6 8—7.2		T-3502ONX9	O61A		727	1056 C	TX	84	10x3x¼	CP
33	Duplex TH6		162	220	30000	9180	8.25 20	9.00 20	Her JXD	6-4¾4½	320	6	240	113-3000	7-2½x10½		Y Fu 5H33A	10 Tim SBD1055	BF	L	** 6 16		Tim 32502H	L61HV	513	839 A	TX	83	9 1/2x3 1/2x A	L
34	(D) L6		172	208	45000	15000 11.00 20	12.00 20		Cum HB600	6-4⅞x6	672	17	495	150-1800	7-4¼x16½		Y Fu 5A920	5 Tim S19454	SF2	L	6 16 8—8	15	Tim 20450	Ws61A	1137	1625 A	TX	77	9½10 1/2x3 1/2x A	L
35	Federal 663MA		189	225		14500 10.00 20		10.00 22	Con R6602	6-4⅛x5½	502		164	200-2600	7-3¼x13½		Y Fu 5A65▼	15 T SW3012P	WF	R	** —6	16	Tim 36000T W	Ws61A	1082	1569 a	TD	108	10½x3½x A	T
36	664MAH		189	225		15750 11.00 22		12.00 20	Con R6602	6-4⅛x5½	502		164	200-2600	7-3¼x13½		Y Spl 2741▼	12 Tim SW1563P	WF	R	** —7	6	Tim 27452W	Ws61A	1308	1888 a	TD	108	10½x3½x A	T
37	664MA		189	225		15750 11.00 22		12.00 20	Con R6602	6-4⅛x5½	502		164	200-2600	7-3¼x13½		Y Spl 2741▼	12 Tim SD1625P	WF	R	** —8	15	Tim 27452W	Ws61A	1092	1654 a	TD	108	10½x3½x A	T
38	629M		163	199		8600 8.25 20		9.00 20	Her JXDF	6-4¾4¼	320		230	112-2800	7-2⅞x10½		Y Cla 205V▽▽	10 TSBD1055dph	SF	R	7 33	10	Tim 32514H	LT61HV	544	914 a	TX	84	9 A x33 1/4x A	TL
39	629ML		163	199		8633 8.25 20		9.00 20	Her JXLD	6-4¾4¼	320		272	126-2800	7-2⅞x10½		Y Cla 205V▽▽	10 TSBD1055dph	SF	R	7 33	10	Tim 32514H	LT61HV	544	914 a	TX	84	9 A x33 1/4x A	T
40	635M		167	203		10300 9.00 20		9.00 20	Con T6371F	6-4¾4¼	427		342	155-2900	7-2¾x13½		Y Cla 270V▽▽	10 TSBD1135dph	SF	R	8 33	12	Tim 35011H	LT61HV	752	1132 a	TX	84	10½x3½x A	T
41	645M		167	215		12325 10.00 22		10.00 22	Con T6427F	6-4¾4¼	427		342	155-2900	7-2¾x13½		Y Cla 270V▽▽	5▽T-8D3010P	BR	R	** —9	16	Tim 35011 TW	Ws61A	1073	1550 a	TD	84	10½x3½x A	T
42	F.W.D. M6846		Opt	Opt	58000	●21400 11.00/24D	11.00/24		Wau 145GK	6-5⅛x6	779.6	7	585	186-2000	7-3½x17¾		Y Own M	10 Wis SD462	2F	L	** —10	6	Wis F409	Ws61A	1080	1680 a	T6	120	10 A x33x H	P
43	(D) M6X6D		Opt	Opt	58000	●21600 11.00/24D	11.00/24		Bu DCS44	6-5¾x6½	844		605	180-1800	7-3¾x17		Y Own M	10 Wis SD462	2F	L	** —10	6	Wis F409	Ws61A	1080	1680 a	T6	120	10 A x33x H	P
44	International (2)																														
45	KB-6F 4R	3300	151	194	24000	7010	7.50 20D	8.25 20	Own BLD250	6-3 A x4½	251.6	3	200	100-3200	4-2¾x5⅜		N Own F51	5 Own RT1450	SF	H	6 16-6	66	Own F470	LH61HV	495	869 c	PX	84	8 A x A x A	T
46	KB-5F 4R	4950	161	215	30000	8670	8.25 20D	9.00 20	Own RED361	6-4⅛x4½	361.6	3	282	126-3000	7-3¼x10½		Y Own F52	5 Own RT1560	SF	H	6.50-7	16	Own F550	LH61HV	644	1105 c	PX	84	9 A x A x A	T
47	KB-11F 4R	7425	161	215	41000	10830	9.00 20D	10.00 20	Own RED450	6-4⅝x5	451.6	3	350	138-2600	7-3¼x10½		Y Own F54	5 Own RT1670	SF	H	** —7	16	Own F760	LH61HV	738	1179 G	PX	84	10x3 A x A x	T
48	W404H	12925	203	239	40000	15740	10.00 22	11.00 22	Cum HB600	6-4⅞x6	672	17	492	150-1800	7-4¼x16½		Y Spl 2741	4 Tim SW3012	WF	L	4 71-6	16	Own S2P	BW61A			PX	108	10x3 1/2x A	C
49	W456HOH	13750	193	242	54000	17570	10.00 22	11.00 22	Cum HB600	6-4⅞x6	672	17	492	150-1800	7-4¼x16½		Y Spl 2741	4 Tim SW3012	WF	L	6.00-7	6	Own S2P	BW61A	1020		PX	90	10x3 1/2x A	L
50	W656HOH	15700	206	302	65000	19895	11.00 24	12.00 24	Cum HB600	6-4⅞x6	672	17	492	150-1800	7-4¼x16½		Y Spl 2741	4 Tim SI3466	2F	H	8.15-11	66	Own S2F	BW61A			PX	108	10x3 1/2x A	L
	Kenworth																														
51	(D) 522		187	245	43000	12900	10.00 20	11.00 22	Cum HB6	6-4⅛x6	672	17	500	150-1800	7-4¼x16½		Y BI 8241	4 Tim U200PA◊					Tim 36000TW	Ws41A	1135				9 1/2x3 1/4x A	
52	(D)523 4R		193	241	41000	14600	10.00 20	11.00 22	Cum HB6	6-4⅛x6	672	17	500	150-1800	7-4¼x16½		Y BI 8241	4 T▽ SW3012PA	WF	R	** —6	16	Tim 36000	Ws41A	924	1248 a	TD	102	9 1/2x3 1/2x A	C
53	(D)524 4R		193	241	54000	15100	10.00 20	11.00 22	Cum HB6	6-4⅛x6	672	17	500	150-1800	7-4¼x16½		Y BI 8241	4 Tim SW456	WF	R	6.0 -7	6	Tim 36000	Ws41A	819	1192 a	TD	109	9 1/2x3 1/2x A	C
54	(D)548 4R		193	241	54000	17000	11.00 22	12.00 24	Cum HB6	6-4⅛x6	672	17	500	150-1800	7-4¼x16½		Y BI 8241	4 Tim SI3462	DR	R	** —8	15	Tim 36000	Ws41A	819	1192 a	TD	109	9 1/2x3 1/2x A	dbC
55	(D)552 4R		255	255	54000	20700	13.00 24	14.00 24	Cum HB6	6-4⅛x6	672	17	500	150-1800	7-4¼x16½		Y BI 8241	4 Tim SI4462W	WF	R	** —8	15	Tim F3200W	Ws41A	1109	1192 a	TD	168	9 1/2x3 1/2x A	dbC
56	(D) 584		193	241	95000	24800	12.00 24	14.00 24	Cum HB6	6-4⅛x6	672	17	500	150-1800	7-4¼x16½		Y BI 7841	4 Tim SI3472	WF	R	8.07-11	56	Shu 12	Ws41A		2235 a	TD	109	9 1/2x3 1/2x A	dbC
57	(D) 825		193	241	42000	14900	10.00 20	11.00 22	Cum HB6	6-4⅛x6	672	17	500	150-1800	7-4¼x16½		Y BI 8241	4 TG8W458P	VF		6.0-7.6		Tim 36000	Ws41A	1016	a	TD	102	9 1/2x3 1/2x A	C
58	829		180	234	42000	14650	10.00 20	11.00 22	Bud LO525	6-4⅜x5½	525.5	5	385	150-2200	7-3x11		Y Fu5A620	5 TSD3010P	DR	R		8-27	Tim 36000	Ws41A	924	a	TD	104	9 1/2x3 1/2x A	
59	(D) 888		219		110000	29400	14.00 24		Cum NHB6	6-5½x6	744.17		575	200-2100	7-4¼x16½		Y BL 7841	4 Tim CDH79	WF	C	** —14	71	Shu 12	Ws41A		2437 a	TD	129	10½x3 1/2x H	dbC
	Marmon-Herr																														
60	(C) R5-6		156		22500	●16737 50 20D	7.50 20		Ford	8-3 A x3¾	239.6	4	180	100-3800	3-2½x4	71	S Ford	4 Timken	S	H	** —6	67	Own M5	M	503	a	F	82	7 1/2x3x 1/4	C

▽ Auxiliary transmission Spicer 703F with 3 forward speeds.
◇ Torque divider, Timken T70-2 speed.
‡ Three speed transmission—2 speed transfer case.
▽▽ Overdrive optional.
▲ Includes cab.
• Complete vehicle with pick-up type body.
■ 1090 cu. in.
▼ Timken T76-Two speed transfer case.
* Timken T77 2-speed Transfer Case.
▷ Auxiliary transmission spicer 6231B at extra cost gives 15 forward speeds.
† Timken T13126 PA Trailing Axle.

For page on which Directory of Manufacturers appears, see Table of Contents page 65

CURRENT TRUCK SPECIFICATIONS—*Concluded*

Line Number	MAKE AND MODEL	Chassis List Price	WHEEL-BASE Minimum Standard	WHEEL-BASE Maximum Standard	Gross Vehicle Weight for Normal Service	Chassis Weight See definition	TIRE SIZES D-dual rear S-single rear Standard Front and Rear	TIRE SIZES Maximum Authorized Tire Size (Including Extra Equipment)	ENGINE DETAILS Make and Model	No. of Cylinders, Bore and Stroke	Displacement	Comp. Ratio	Torque lb. ft.	Max. Brake Horsepower R.P.M. Given	Main Bearings Number	Main Bearings Diameter and Length	Governor Standard	TRANSMISSION Make and Model	REAR AXLE Forward Speeds	REAR AXLE Make and Model	REAR AXLE Gear and Type	REAR AXLE Drive & Torque	REAR AXLE Gear Ratio Range in High	FRONT AXLE Make and Model	BRAKES SERVICE Make Location Type Operation	BRAKES SERVICE Lining Area	BRAKES SERVICE Drum Diam.	BRAKES SERVICE Drum Material	BRAKES Hand Location Type	FRAME C-A Dimensions, Min. Std. W. B.	FRAME Side Rail Dimensions	FRAME Type
	Mar.-Herr. Cont'd																															
1	(C) R6-6		180		22 480	▲6710	7.50-20	D 7.50-20	Ford	S-3 3/8 x 3 1/4	239.6	4.18	100-3800	3-2 1/2 x 1	71	N	Ford	4 Timken	S	H **	-6	67	Own	M5	M	503	a	F	106 1/2	7 1/2 x 3 3/8 x 3/4	C
2	MH 110-6		182		34000	▲10600	9.00-20	10.00-20	Her WXLC3	6-4 1/4 x 4 1/2	404.5	4.23	9118-2800	7-2 1/4 x 13 1/4		Y	Fu 5A430	5 Own	1123	2B	H **	-8	43	Own	121	Ws	A	876	C	F	96	9 H 3/8 x 3	T
3	MH-555-6		182		42900	▲13900	11.00-20	11.00-20	Her RXC	6-4 3/8 x 5 1/4	529.6	3.93	0 131-2200	7 x 13 1/4		Y	Fu 5A620	5 Own	1124	2B	H **	-8	15	Own	122	Ws	A	1092	1698	C	F	93	10 x 3 3/8	T
4	(C) R5-COE6		156	180	22500		7410	7.50-20	D 7.50-20	Ford	S-3 3/8 x 3 1/4	239.6	4.18	0 100-3800	3-2 1/2 x 1	71	N	Ford	4 Ford		S	H	-6	67	Own		F	H	303	563	A	F		7 x 2 3/32	S 3 1/4	T
5	(C) Q-5-6		160		35000	▲9250	9.00-20	10.00-20	Ford	6-3 1/4 x 4 1/2	337.6	4.25	5145-3600	3			Ford	5 Ford			H **	-6	80	Own		F	H	350	583		F	85	9x3 1/4		T
6	(C) Q-6-6		184		35000	▲9700	9.00-20	10.00-20	Ford	6-3 1/4 x 4 1/2	337.6	4.25	5145-3600	3			Ford	5 Ford			H **	-6	80	Own		F	H	350	583		F	109	9x3 3/4		T
	Oshkosh																															
7	..... W703-6X6		Opt	Opt	47800	16950	11.00-20	D 12.00-20	Her RXLD	6-4 3/8 x 5 1/4	558.5	4.43	0 150-2200	7	3 1/2 x 13 1/4	Y	Fu 5A650	12 Tim	SD451W	2F	H **	-6	31	Own-Tim		L6IH		1080	1625	G	TX	Opt	10 1/2	3 1/2 x 3/4	B
8	(D) W1600BD		245	Opt	60000	22770	11.00-24	D 12.00-24	Bu 6DC844	6-5 1/2 x 6 1/2	844	.....	600	180	1800	7	3 1/4 x 17	Y	Fu 4H86	12 Tim	SD462	2F	H **	-6	14	Own-Tim		LT61A		1080	1625	G	TX	160	12 3/4	x 3 1/2 x 3/4	B
9	(D) ..**W1600BDH		267	Opt	60000	24300	11.00-24	D 12.00-24	Bu 6DC844	6-5 1/2 x 6 1/2	844	.....	600	180	1800	7	3 1/4 x 17	Y	Fu 4H86	12 Tim	SD462	2F	H **	-9	82	Own-Tim		LT61A		1080	1625	G	TX	174	12 3/4	x 3 1/2 x 3/4	B
10	(D) ..**W1602HDH		272	Opt	59000	25980	14.00-24	D 14.00-24	Bu 6DC844	6-5 1/2 x 6 1/2	844	.....	600	180	1800	7	3 1/4 x 17	Y	Fu 4H86	12 Tim	SD472	2F	H **	-13	99	Own-Tim		LT61A			2217	G	TX	177	12 3/4	x 3 1/2 x 3/4	B
11	..... W1600BG		245	Opt	60000	22770	11.00-24	D 12.00-24	Bu MO893	6-5 x 6	893	.....	625	200	1800	7	3 1/4 x 17	Y	Fu 4H86	12 Tim	SD462	2F	H **	-9	82	Own-Tim		LT61A		1080	1625	G	TX	160	12 3/4	x 3 1/2 x 3/4	B
12	(D) W1600CD		259	Opt	60000	23400	11.00-24	D 12.00-24	Cum 6HBI	6-4 1/2 x 6	672	.....	500	150	1800	7	4 1/2 x 16	Y	Fu 4H86	12 Tim	SD462	2F	H **	-6	14	Own-Tim		LT61A		1080	1625	G	TX	174	12 3/4	x 3 1/2 x 3/4	B
13	(D) ..W1600CDS		259	Opt	60000	23700	11.00-24	D 12.00-24	Cum 6HBIS	6-4 1/2 x 6	672	.....	635	200	1800	7	4 1/2 x 16	Y	Fu 4H86	12 Tim	SD462	2F	H **	-9	82	Own-Tim		LT61A		1080	1625	G	TX	174	12 3/4	x 3 1/2 x 3/4	B
14	(D) ..**W1600CDH		265	Opt	60000	24000	11.00-24	D 12.00-24	Cum 6HBI	6-4 1/2 x 6	672	.....	500	150	1800	7	4 1/2 x 16	Y	Fu 4H86	12 Tim	SD462	2F	H **	-9	82	Own-Tim		LT61A		1080	1625	G	TX	172	12 3/4	x 3 1/2 x 3/4	B
15	(D) **W1600CDSH		267	Opt	60000	24300	11.00-24	D 12.00-24	Cum 6HBIS	6-4 1/2 x 6	672	.....	635	200	1800	7	4 1/2 x 16	Y	Fu 4H86	12 Tim	SD462	2F	H **	-6	14	Own-Tim		LT61A		1080	1625	G	TX	174	12 3/4	x 3 1/2 x 3/4	B
16	Peterbilt (D) ..350		193	Opt	42000	.....	10.00-20	D 11.00-22	Cum HB600	6-4 1/2 x 6	672	17	500	150	1800	7	4 1/2 x 16 1/2	Y	Spi 8041	12 Tim	SW3012W	W1	R 6.00	-8	5	T 36000W		W861A		1125	1569		TD	99	10	x 3 1/2 x 3/4	C T
17	(D) ..360		198	Opt	54000	.....	10.00-20	D 11.00-22	Cum HB600	6-4 1/2 x 6	672	17	500	150	1800	7	4 1/2 x 16 1/2	Y	Spi 8041	12 Tim	SW456W	W1	R 6.00	-10	2 T	36000W		W861A		1065	1517		TD	104	10	x 3 1/2 x 3/4	C T
18	(D) ..370		198	Opt	58000	.....	10.00-20	D 11.00-22	Cum HB600	6-4 1/2 x 6	672	17	500	150	1800	7	4 1/2 x 16 1/2	Y	Spi 8041	12 Tim	SW456W	W1	R 6.00	-10	2 T	27465		W861A		1084	1626		TD	104	10	x 3 1/2 x 3/4	C T
19	(D) ..380		191	Opt	58000	.....	11.00-22	D 11.00-22	Cum HB600	6-4 1/2 x 6	672	17	500	150	1800	7	4 1/2 x 16 1/2	Y	Spi 8041	12 Tim	SD462W	2F	R **	-8	92	T 27465		W861A		1084	1626		TD	104	10	x 3 1/2 x 3/4	C T
20	(D) ..390		197	Opt	79000	.....	12.00-24	14.00-24	Cum HB600	6-4 1/2 x 6	672	17	500	150	1800	7	4 1/2 x 16 1/2	Y	Spi 8041	12 Tim	SD472W	2F	R **	-8	92	T 27465		W861A		1922	2215		TD	103	10	x 3 1/2 x 3/4	C T
21	Reo ..D-226R-4R		167	203	34000	9782▲	8.25-20	9.00-20	Own GC310H	6-3 1/2 x 5	310	6.2	243	104	3000	7	2 1/2 x 10	7	Y	Fu 205V-X9	5	Tim	8H1555	SE	T 6.78	-13	1	T	Tim	32500	T4HVH	560	944	var	TD	102	9 1/2	x 3 1/2 x 3/4	TP
22	..... D-236, 4R		169	200	47000	13060	10.00-20	10.00-20	Con T-6427	6-4 3/4 x 4 1/2	427	6	236	153	2800	7	2 1/4 x 13	6	Y	Cla270V-A1	9	15	Tim	SD3010	SF2	T 7.5		Tim	36000	W841A	1082	1570	var	TD	104	9 1/2	x 3 1/2 x 3/4	TP
23	..... D-316, 4R		186	248	56000	16000▲	10.00-20	10.00-20	Con R-6602	6-4 3/4 x 5 1/2	602	5.9	346	204	2800	7	3 1/4 x 14	7	Y	Spi6252A-5	3 1/2	15	Tim	SD454	SF2	T 7.33	-8.15	Tim	36000	W841A	1230	1778	var	TD	108	10	x 3 1/2 x 3/4	TP
	Sterling																															
24	..... HB8130		164	183	32000	11000	8.25-20	10.00-20	Wau 6MZA	6-4 1/4 x 4 1/4	401.5	6.2	90	130	3000	7	2 1/4 x 12 1/2	7	Y	Fu 5A43	5	T-SBD1555DPH	SE	L 6.80	-13	14	T-35011H		T61HV		664	1134	A	TX	83	9x3 1/4	x 1/4	A
25	..... H108140		164	183	39400	11800	9.00-20	10.00-20	Wau 6MZA	6-4 1/4 x 4 1/4	401.5	6.2	90	130	3000	7	2 1/4 x 12 1/2	7	Y	Fu 5A43	5	T-SD3010PA	2F	L 6.84	-10	22	T-35011TW		W861A		1074	1554	A	TX	83	9x3 1/4	x 1/4	A
26	..... HW8140		164	183	42000	12480	10.00-20	11.00-22●	Wau 6SBKR	6-4 3/4 x 5 1/4	517	5.9	258	125	2250	7	3 x 13 1/4	7	Y	Fu 5A62	5	T-SW3010PA	WI	L 5.40	-8	50	T-36000TW		W861A		1082	1574	A	TX	83	9x3 1/4	x 1/4	A
27	..... HW8235		182	193	52000	15700	11.00-20	11.00-24	Wau 14GK	6-5 1/4 x 6	779	6	285	186	2100	7	3 1/4 x 17	7	Y	Fu 4H86	4	T-SW456P	WI	L 5.67	-8	20	T-27454W		W861A		1308	1892	A	TX	92	9	x 3 1/4 x 1/4	A
28	(D) ..HW8160H		182	193	42000	14250	10.00-20	11.00-22	Cum HB600	6-4 x 6	672	17	500	150	1800	7	4 1/2 x 16 1/2	Y	Fu 4H86	4	T-SW3012PA	WI	L 4.71	-6	17	T-36000TW		W861A		1082	1574	A	TX	92	9x3 1/4	x 1/4	A
29	(D) ..HW8235H		182	193	52000	16000	11.00-20	11.00-24	Cum HB600	6-4 x 6	672	17	500	150	1800	7	4 1/2 x 16 1/2	Y	Fu 4H86	4	T-SW456P	WI	L 5.66	-8	20	T-27454W		W861A		1308	1892	A	TX	92	9	x 3 1/4 x 1/4	A
30	..... HC8215		182	193	60000	15300	10.00-20	11.00-22	Wau 140GK	6-5 1/4 x 6	779	6	285	186	2100	7	3 1/4 x 17	7	Y	Fu5A62-3A92	15	Own	195W	CD	R 6.94	-7	31	T-36000TW		W861A		1082	1802	A	TX	93	9x3 1/4	x 1/4	A
31	..... HC8265		182	193	60000	17770	11.00-20	12.00-24	Wau 145GK	6-5 1/4 x 6	779	6	285	186	2100	7	3 1/4 x 17	7	Y	Fu 4H86♦	12	Own	265W	CD	R 9.21	-13	16	T-27454W		W861A		1060	1912	A	JX	92	9	x 3 1/4 x 1/4	A
32	..... HC8295		182	193	70000	20750	12.00-24	13.00-24▲	Wau 145GK	6-5 1/4 x 6	779	6	285	186	2100	7	3 1/4 x 17	7	Y	Fu 4H86♦	12	Own	330W	CD	R 9.21	-13	16	T-27454W		W861A		1280	1988	A	JX	92	9	x 3 1/4 x 1/4	AL
33	..... HC8330		174	187	80000	23150	12.00-24	14.00-24▲	Wau 145GK	6-5 1/4 x 6	779	6	285	186	2100	7	3 1/4 x 17	7	Y	Fu 4H86♦	12	Own	330W	CD	R 9.21	-13	16	T-27454W		W861A		1280	1988	A	JX	92	9	x 3 1/4 x 1/4	AL
34	(D) ..HC8195H		182	193	48000	16000	10.00-20	11.00-22	Cum HB600	6-4 x 6	672	17	500	150	1800	7	4 1/2 x 16 1/2	Y	Fu	4H86-3A92	12	Own	195W	CD	R 6.94	-7	31	T-36000TW		W861A		1082	1802	A	TX	92	9x3 1/4	x 1/4	A
35	(D) ..HC8265H		182	193	60000	18100	11.00-20	12.00-24	Cum HBD600	6-4 x 6	672	17	500	150	1800	7	4 1/2 x 16 1/2	Y	Fu 4H86♦	12	Own	265W	CD	R 9.21	-13	16	T-27454W		W861A		1160	1912	A	JX	92	9	x 3 1/4 x 1/4	A
36	(D) ..HC8295H		182	193	70000	21050	12.00-24	13.00-24▲	Cum HBD600	6-4 1/2 x 6	672	17	500	150	1800	7	4 1/2 x 16 1/2	Y	Fu 4H86♦	12	Own	330W	CD	R 9.21	-13	16	T-27454W		W861A		1280	1988	A	JX	92	9	x 3 1/4 x 1/4	AL
37	(D) ..HC8330H		174	187	80000	23450	12.00-24	14.00-24▲	Cum HBD600	6-4 1/2 x 6	672	17	500	150	1800	7	4 1/2 x 16 1/2	Y	Fu 4H86♦	12	Own	330W	CD	R 9.21	-13	16	T-27454W		W861A		1280	1988	A	JX	91	12	3/4 x 3 1/2 x 3/4	AL
	Truckstell																															
38	(C) F2X28 2F		156	237	28000	6486	7.50-20	S 8.25-20-10	Ford	S-3 3/8 x 3 1/4	239.6	8	180	100	3800	3-2	49x4	9	N	Ford	4	Ford●	8F	H 5.83	-8	11	Ford		F61HV		502	835	*	TX	82	9	1/2 x 8 3/4 x 8	T1 *
39	(C) F2X29-6(eue) 2F		134	224	28500	▲7083	7.50-20	S 8.25-20-10	Ford	6-3 1/4 x 4 1/2	337.6	4.25	5145	145	3600	3	2	87x5	0	Y	Ford	4	Ford●	8F	H 5.83	-8	11	Ford		F61HV		502	835	*	TX	82	9	1/2 x 8 3/4 x 8	T1 *
40	(C) F2X28-7 2F		156	230	28000	7807	7.50-20	S 8.25-20-10	Ford	6-3 1/4 x 4 1/2	337.6	4.25	5145	145	3600	3	2	87x5	0	Y	Ford	5	Ford	Hy	H 6.8			Ford		F61HV		560	935	*	TX	82	9	1/2 x 8 3/4 x 8	T1 *
41	(C) F2X34-7 2F		156	230	34000	8108	8.25-20	9.00-20-10	Ford	6-3 1/4 x 4 1/2	337.6	4.25	5145	145	3600	3	2	87x5	0	Y	Ford	5	Ford	Hy	H 6.8			Ford		F61HV		560	935	*	TX	82	9	1/2 x 8 3/4 x 8	T1 *
42	(C) F2X38 2F		156	250	38000	8704	9.00-20	9.00-20-10	Ford	6-3 1/4 x 4 1/2	337.6	4.25	5145	145	3600	3	2	87x5	0	Y	Ford	5	Ford●	8F	H 6.5	-8	87	Ford		F61HV		605	1081	‡	TX	82	9	1/2 x 8 3/4 x 8	T1 *
43	(C) F2X40 2F		156	250	40000	9309	9.00-20	10.0 20-10	Ford	6-3 1/2 x 4 1/2	337.6	4.25	5145	145	3600	3	x	87x5	0	Y	Ford	5	Ford●	8F	H 6.5	-8	87	Ford		F61HV		835	1232	‡	TX	82	9	1/2 x 8 3/4 x 8	T1 *
44	(C) C2X28 2F		157	247	28000	6629	7.50-20	S 8.25-20-10	Chev.	6-3 3/4 x 3 1/2	233.6	6	192	93	3100	4	Std	Chev	Y	Chev	4	Chev	7	Hyd	H 6	17		Chev		C61HV		530	808	*	TX	82	9	1/4 x 3 3/4	C1 *
45	(C) C2X29-6(eue) 2F		130	224	29000	7204	7.50-20	S 8.25-20-10	Chev.	6-3 3/4 x 3 1/2	233.6	6	192	93	3100	4	Std	Chev	Y	Chev	4	Chev	7	Hyd	H 6	17		Chev		C61HV		530	808	*	TX	82	9	1/4 x 3 3/4	C1 *
46	(C) F4X26 ..... 4R		144	209	26000	7300▲	7.50-20	S 8.25-20*	Ford	6-3 3/4 x 3 1/2	239.6	8	180	100	3800	3-2	49x4	9	N	Ford	4	Ford	8F	R **	-6	67	Ford		F61HV		498	836	Co	TX	64	8	3/8 x	46	T1 *
47	(C) F4X27 (eue) 4R		126	183	27000	7665▲	7.50-20	S 8.25-20*	Ford	6-3 3/4 x 3 1/2	239.6	8	180	100	3800	3-2	49x4	9	N	Ford	4	Ford	8F	R **	-6	67	Ford		F61HV		498	836	Co	TX	71	8	3/8 x	46	T1 *
48	(C) F4X34 ..... 4R		156	228	34000	8200▲	7.50-20	S 8.25-20*	Ford	6-3 1/2 x 4 1/2	337.6	4.25	5145	145	3600	3	2	87x5	0	Y	Ford	15	Ford	Hy	R **	-7	16	Ford		F61HV		700	941	Co	TX	82	9	x 3 3/4	T1 *
49	(C) F4X46 ..... 4R		156	228	40000	12500▲	9.00-20	10.00-20*	Ford	6-3 1/2 x 4 1/2	337.6	4.25	5145	145	3600	3	2	87x5	0	Y	Ford	15	Ford	Hy	R **	-7	16	Ford		F61HV		825	1231	Co	TX	82	9	x 3 3/4	T1 *
50	(C) C4X29 ..... 4R		151	217	29000	7500▲	7.50-20	S 8.25-20*	Chev	6-3 3/4 x 3 1/2	233.6	6	192	93	3100	4	Std	Chev	Y	Chev	7	Chev	7	Hyd	R **	-6	17	Chev		C61HV		506	780	Co	21	68	9	x 3 3/4	C1 *
51	(C) C4X30 (eue) 4R		125	192	30000	7865▲	7.50-20	S 8.25-20*	Chev	6-3 3/4 x 3 1/2	233.6	6	192	93	3100	4	Std	Chev	Y	Chev	7	Chev	7	Hyl	R **	-6	17	Chev		C61HV		506	780	Co	21	69	9	x 3 3/4	C1 *

▲ Includes Cab.
● Front only. Rear 8.25-20.
‡ Rear only. Front 11.00-24
: S831F-G Spicer Auxiliary Transmission Available.
◆ Auxiliary transmission, Spicer 8031.
● Two speed axle with vacuum shift
△ Rear only. Front 12.00-24
(33) With Baumis auxiliary transmission
† Front only. Rear 9.00-20.
†† Front only. Rear 10.00-20.
(22) When 11.00-22 tires are required it is necessary to furnish 52 inch axle spacing.
(55) Hydraulic Coupling
▼ Two speed axle available—6.13-8.10.
▼ Including slip-over reinforcing frame channels
(77) Chassis weights on duals Front, Center and Rear.
◆◆ With Baumis power divider
* Composite Cast Alloy Iron
‡ Cast Alloy Iron
♦ 6231 Spicer Auxiliary Transmission.
* Front only

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U. S. ROTARY WING AIRCRAFT

MAKE AND MODEL		GENERAL					ENGINE			MAIN ROTOR							ANTI-TORQUE ROTOR					WEIGHTS (Lb.)			PERFORMANCE						LANDING GEAR	
		A. T. C. Number	Number of Seats	Fuel Capacity (Gal.)	Octane Number Recommended	Oil Capacity (Gal.)	Make and Model	Number Used	Rated Hp. at Specified R. P. M.	Number Used	Location	Blades per Rotor	Diameter of Rotor (Ft. In.)	Blade Area (Sq. Ft.)	Type, (If more than one used)	Rotor R. P. M. at Cruising Speed	Disc Area (Sq. Ft.)	Number of Blades	Rotor Diameter (Ft. In.)	Blade Area (Sq. Ft.)	Rotor R. P. M. at Cruising Speed	Disc Area (Sq. Ft.)	Gross (Normal Load)	Empty	Useful Load	Max. Speed at Altitude	Cruising Speed at Altitude	Fuel Consumption Cruising Speed (Lb. /hr.)	Range (Miles) at Cruising Speed	Rate of Climb: Maximum (Ft. /min.)	Rate of Climb: Vertical (Ft. /min.)	Service Ceiling—Normal Load	Type	Tread Main Gear
Bell	47B	1	2	32	(a)	2	Frank 6V4-178-B32	1	178 3000	1	Cla	2	35' 1½"	35.3		330	965	2	5' 9"	2.40	1800	25.3	2200	1323	677	40 11600	70 + 5000	66	212	925		11600	4(t)	5' 10¼"
	47D	1	2	33	(a)	2	Frank 6V4-178-B32	1	178 3000	1	Cla	2	35' 1½"	35.3		330	965	2	5' 9"	2.40	1800	25.3	2200	1482	718	40 11000	70 + 5000	66	212	800		11000	4(t)	5' 10¼"
	47D-1		3	28		2	Frank 6V4-178-B32	1	178 3000	1	(b)	2	35' 0½"	35.3		330	965	2	5' 9"	2.40	1800	25.3	2200	1380										5' 10¼"
Doman-Franier	LZ-1A		2	75	91	4.1	Frank 0-405-9	1	228 3100	1	Cen	4	38' 4"	72		239	1153	3	8' 0"	6.10	1200	50.2	2490	1920	570	135-SL	100-SL	85	520	1900	520	1400	TS	9' 0"
	LZ-2C		2 7	188	80	3¼	Frank 6AL-500	1	250 3000	1	Cen	4	45' 0"	82		200	1590	3	8' 0"	6.10	1200	50.2	3200	1800	1400	85-SL	75	74	770	1135	340	14000	Tri	7' 0"
Helicopters	J		4	100	91	8	P&W-Wasp Jr	1	450 2300	2		2	48' 0"	99	CoA	192	1810						5400	3600	1800	124-SL	95-SL	146	385	1460	840	22100	Tri	12' 0"
Kaman	K-190		3	32	73		Lyo 0-435	1	190 2550	2	**	2	38' 0"		Int	221		None					2500	1700	800	90-SL	70-SL		235	1200	900	11000	Tri	8' 0"
Kellett	H-10		12	180	91	21.3	Cont R-975-17	2	1000 2450	2	SS	3	65' 0"	296	Int	140	3710	None					11100	8287	2813	121-SL	90-SL	280	348	1650	1030	18800	Tri	10' 0"
McDonnell	38		1				Own Ram-Jets	2		1		2	18' 0"	7.6		640	254	None					610	285	325	50 + -SL	50-SL						Tri	
	XHJD-1		10	200	91	16	P&W R985-AN-14B	2	450	2	SS	3	46' 0"	200	Int	190	3324	None					11000			100 + -SL	70 + -SL						Tri	17' 6"
Piasecki	HRP-1		10	100	91	8.5	P&W R-1340	1	600-2250	2	Tan	3	41' 0"		Tan			None					8900	4927	1973	114 5000	91-2500	195	265	930	500	10400	Tri	10' 0"
Sikorsky	S-51	2	4	100	90	8	P&W R-985-B4	1	450 2300	1	For	3	48' 0"			185		3	8' 5"		1220		4385	3735	1250	103 (c)	85 (d)	168	260	1200	600	14000	Tri	12' 0"
	S-52	3	2	41	80	2	Frank 6-ALV165-B13F	1	165 3000	1	For	3	32' 0"			280		2	5' 0"				2100	1395	705	94-SL	80-(e)	69	250	755	100	10900	Tri	8' 2¾"
United	UH-12	6H-1	3	27	80	2	Frank 6V4-178-B33	1	178 3000	1	For	2	35' 0"	36		306	962	2	5' 6"	2.30	1770	23.8	2247	1442	805	84-SL	75-SL	75	144	730	400	7500	Tri	7' 8"

ABBREVIATIONS

**—Laterally disposed on center of gravity
(x)—80-90 octane

(b)—2" Aft station O
(4t)—Quadracycle with tail skid
(c)—Sea level to 2300 ft.
(d)—Sea level to 9500 ft.

(e)—Sea level to 5000 ft.
Cen—Central
Cla—Center line of engine aft of cabin
CoA—Co-axial

Cont—Continental Motors Corp.
For—Forward
Frank—Franklin (Air-Cooled Motors)
Int—Inter-meshing

Lyo—Lycoming Motor
P&W—Pratt & Whitney Aircraft
SL—Sea level
SS—Side by side

Tan—Tandem, fore and aft
Tri—Tricycle
TS—Tail skid

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1948 Personal Aircraft Shipments by Manufacturers*

Manufacturer	Number of Aircraft	Manufacturer's Net Billing Price
Aeronca	599	$ 1,592,000
Beech	678	5,563,000
Bellanca	49	246,000
Cessna	1,631	6,768,000
Engineering and Research	152	411,000
Luscombe	716	1,945,000
Piper	1,479	3,083,000
Republic	24	$ 103,000
Ryan	483	3,289,000
Stinson	801	3,902,000
Taylorcraft	105	196,000
Texas Engineering	252	808,000
Total	6,969	$27,906,000

*—Aircraft Industries Association.

AMERICAN COMMERCIAL

Line Number	MAKE AND MODEL	Type	A.T.C. Number	Number of Crew	Number of Passengers Seated	FUEL Capacity (Gal.)	FUEL Octane Recommended	ENGINE Oil Capacity (Gal.)	ENGINE Make and Model	ENGINE Number Used	ENGINE Take-off Hp. at Specified R.P.M.	PROPELLERS Make	PROPELLERS Type	PROPELLERS Diameter (Ft. & In.)	PROPELLERS Number of Blades	DIMENSIONS (Ft. & In.) Span	DIMENSIONS (Ft. & In.) Overall Length	DIMENSIONS (Ft. & In.) Height (Taxi Position)	Wing Area (Gross) Sq. Ft.	Aileron Area (Sq. Ft.)
1	Aeronca	7AC PL-S	A759	1	1	13	80	1	Cont	A-65-8	1	65-2300	L-H-S	Fxd	◇◇	2	35' 2"	21' 6"	7' 0"	170.0	7.10
2		7BCM PL	A759	1	1	13	90	1½	Cont		1	85-	S-M	Fxd	(aa)	2	35' 2"	21' 6"	7' 0"	170.0	7.10
3		11CC PL-S	A756	1	1	23	80	1½	Cont	C-85-8F	1	85-2575	S-L-M	Fxd	(bb)	2	36' 1"	20' 5"	8' 7"	178.0	7.10
4		7DC PL		1	1	18.6	80	8½	Cont	C-85-8F	1	85	S-M	Fxd	(bb)	1	35' 2"	21' 8"	8' 8"		
5		15 PL		1	3	39	80	8	Cont	C-145-2	1	145	S-M	Fxd	78	1	37' 6"	25' 2"	7' 0"		
6	Baumann	B-250 PC-L	Pend	1	4	75	73		Cont	C-145	2	*145-2700	A-S	Cnt	6' 6"	2	41' 0"	27' 6"	10' 0"	207.0	*8.95
7	Beechcraft	35 PL	A777	1	3	39	80	2½	Cont	E185-1	1	185-2300	Own	Cnt	7' 4"	2	32' 10"	25' 2"	6' 6½"	177.6	14.33
8		D18S PL	765	1	8	206	87	17	P&W	R985-AN14B	2	450	Ham	Hyd-Mc	8' 3"	2	47' 7"	33' 11"	9' 2½"	349.0	22.6
9	Bellanca	14-13 PL	773	1	3	40	80	2	Frank	6A4-150-B3	1	85-2600	S-A	F-C	6' 2"	2	34' 2"	21' 3½"	5' 6½"	161.5	
10	Boeing	Stratocruiser PL		5-7	80	7790	115/145	200	P&W	TS83-C	4	3500-2700	H-C	C-Ff-Fr	**	4	141' 3"	110' 4"	38' 3"	1769.0	64.6*
11		Stratofreighter CL		3-5	N	7790	115/145	200	P&W	TS83-G	4	3500-2700	H-C	C-Ff-Fr	**	4	141' 3"	110' 4"	38' 3"	1769.0	64.6*
12	Callair	A3 PL	738		2	27	73	2	Cont	C125	1	125-2550	Sen	Fxd	6' 4"	2	35' 10"	23' 5"	7' 0"	181.6	10.9*
13		Cadet-S-1A PL	737		2	15	73	1½	Cont	A65, 85, 90	1	65-2300	Sen	Fxd	6' 0"	2	35' 6"	23' 3½"	7' 3"	173.8	19.35
14	Cessna	120 PL	768		2	25	73	1½	Cont	C85	1	85-2575	Sen	Fxd	6' 7"	2	32' 10"	21' 6"	6' 3½"	159.3	14.0
15		140 PL	768		2	25	73	1½	Cont	C90	1	90-2475	Sen	Fxd		2	32' 10"	21' 6"	6' 3½"	159.3	14.0
16		190 PL-S	790	1	4-5	80	80	5	Cont	W670-23	1	240-2200	Ham	Cst	7' 9"	2	36' 2"	27' 4"	7' 2"	218.0	12.3
17		195 PL-S	790	1	4-5	80	80	5	Jac	R755-A2	2	300-2200	Ham	Cst	7' 9"	2	36' 2"	27' 4"	7' 2"	218.0	12.3
18		170 PL	799	1	3	37.5	80	2	Cont	C145		145-2700	Sen	Fxd	6' 1"	2	36' 0"	25' 0"	6' 7"	175.0	14.08
19	Convair	Press. Liner PC-L			40	1000	100/130	140	P&W	R2800	2	2400-2800	H-C	C-Ff-Fr	13' 1"	3	91' 9"	74' 8"	26' 11"	817.0	42.0
20	Curtis-Wright	CW-32 CL		2		3500	100/130	140	P&W	R-2800-CB12	4	2400-2800	Curt	Rp-As	13' 1"	3	131' 2"	91' 0"	36' 0"	1417	
21	Douglas	DC-CA-1135 CL	781	2	N	4700	100/130	150	P&W	CA15	4	2400-2800	Curt	C-Ff-Fr	13' 1"	3	117' 6"	105' 7"	28' 8"	1461.3	85.1
22		DC-6-1156 PC-L	781	5	56	3322	100/130	150	P&W	CA15	4	2100-2800	Curt	C-Ff-Fr	13' 1"	3	117' 6"	111' 6"	28' 5"	1461.3	85.1
23		DC-6-1159 PC-L	781	7	48	4218	100/130	150	P&W	CA15	4	2400-2800	Curt	C-Ff-Fr	13' 1"	3	117' 6"	101' 6"	28' 5"	1461.3	85.1
24	Ercoupe	415-CD PL	718	1	1	23	80	1	Cont	C75	1	75-2275	Sen	Fxd	6' 2"	2	30' 0"	20' 0"	6' 0"	142.6	16.8
25		G PL	787	1	2	24	80	4½	Cont	C85	1	85-2575	Sen	Fxd	6' 2"	2	30' 0"	20' 9"	5' 11"	142.6	16.8
26		H PL	718	1	1	24	80	4	Cont	C75	1	75-2275	Sen	Fxd	6' 2"	2	30' 0"	20' 9"	5' 11"	142.6	16.8
27	Fairchild	24R46 PL	706	1	3	60	80	4	Ror	6-440-C2	1	175-2450	Sen	Fxd	7' 2"	2	36' 4"	25' 10"	7' 7½"	193.3	21.0
28		24W46 PL	706	1	3	60	80	4	Warner	W500-7	1	175-2250	Sen	Fxd	7' 2"	2	36' 4"	23' 9½"	7' 7½"	193.3	21.0
29	Funk	B85C PL			2	20	73 80	4½	Cont	C85-12	1	85	Lewis	Fxd	6' 0"	2	35' 0"	20' 1"		157.1	11.5
30	Grumman	G44-A PA	734	1	4	108	91	7	Ror	6-440-C5	2	200-2450	S-C	Fxd	6' 10"	2	40' 0"	31' 0"	9' 0"	245.0	
31		G-73 PA	783	1-2	10	380	91	20	P&W	R1340-S3H1	2	600-2250	Ham	FF	8' 3"	3	66' 8"	48' 4"	18' 9"	444.0	27.4
32	Lockheed	649-79 PC-L	783	5	48	4880	100/130	220	Wrt	749C18BD1	4	2500-2800	H-C	Rev	15' 1"	3	123' 0"	95' 1"	23' 0"	1650	99.6
33		749-79 PC-L	783	7	44	5820	100/130	220	Wrt	749C18BD1	4	2500-2800	H-C	Rev	15' 1"	3	123' 0"	95' 1"	23' 0"	1650	99.6
34		98 PC-L		11	N	9050	115/145	400	P&W	R4360	4	3500-2700	Curt	Rev	16' 8"	4	189' 1"	156' 1"	50' 5"	3510	218.6
35	Luscombe	8A PL	694	1	1	12½		1	Cont	C65	1	65-2300	L-S	Fxd	5' 11"	2	35' 0"	20' 0"	6' 3"	140.0	14.7
36		8F PL	694	1	1	25		1½	Cont	C90	1	90-2475	L-S	Fxd	5' 11"	2	35' 0"	20' 0"	6' 3"	140.0	14.7
37		11A PC-L	804	1	3	42		2½	Cont	E165	1	160-2050	Sen	Fxd	6' 8"	2	38' 0"	23' 6"	6' 10"	165.0	16.8
38	Martin	2-0-2 PL		3-4	36	1010	100/130		P&W	R2800CA19	2	2400	Ham	Rev	13' 1"	3	93' 3½"	71' 4"	28' 5½"	864.0	
39		2-0-2 CL		2-3		1010	100/130		P&W	R2800CA19	2	2400	Ham	Rev	13' 1"	3	93' 3½"	71' 4"	28' 5½"	864.0	
40	Monsted-Vincent	MV-1 PL		1	5	172	73	7	Cont	C90	4	90-2575	Sen		8' 0"	2	48' 0"	34' 0"	13' 2"	288.0	24.1
41	Northrop	N-23 PC-LS		2	36	1000	91	36	Wrt	957C7BA1	3	800-2500	Ham	Cst-Ff	12' 0"	2	87' 0"	66' 6"	16' 0"	1131.0	39.4
42		N-32 CL		2	N	1600	100	60	Wrt	1820-76	3	1425	H-C	C-Ff-Fr	12' 6"	3	87' 0"	67' 1"	21' 9"	1131.0	
43	Piper	PA-11 PL-S	691	1	1	17	73	1	Cont	A65-8F	1		Sen	Fxd	6' 0"	2	35' 2"	22' 4½"	6' 8"	178.5	19.2
44		PA-11-90 PL		1	1	18	73	1½	Cont	C90	1	90-2475	Sen	Fxd	6' 0"	2	35' 2"	22' 4½"	6' 8"	178.5	19.2
45		PA-15 PL		1	1	12	73	1	Lyco	O145	1	65-2550	Sen	Fxd	5' 10"	2	29' 3"	18' 8"	6' 0"	147.5	19.2
46		PA-17 PL		1	1	12	73	1	Cont	A65-8F	1	65-2300	Sen	Fxd	6' 0"	2	29' 3"	18' 8"	6' 0"	147.5	19.2
47		PA-14 PL		1	3	35	80	1½	Lyco	O235-C1	1	115-2800	Sen	Fxd	6' 2"	2	35' 5"	23' 2"	6' 5"	179.3	19.2
48		PA-16 PL		1	3	38	80	1½	Lyco	O235-C1	1	115-2800	Sen	Fxd	6' 1"	2	29' 3"	20' 1"	6' 2"	147.5	
49	Rosa	RS-2L PL	732	1	1	12	73	1	Lyco	O-145-B3	1	65-2550		Fxd	5' 10"	2	30' 0"	20' 0"	7' 0"	147.0	13.5
50	Ryan	Nav-4 PL	782	1	3	40	80	2½	Cont	E-185	1	185	Har	Cnt	7' 0"	2	33' 4"	27' 3"	8' 7½"	185.0	20.8
51	Sentinel	L5-76 CL-S	764	1	1	36	73	3	Lyco	O435-11	1	190-2550	S-F	Fxd	7' 7"	2	33' 11½"	24' 11½"	7' 1"	155.0	16.7
52	Stinson Voyager	108-3 PL	767	1	3	50	80	2½	Frank	6A4-165-B3	1	165-2800	Sen	Fxd	6' 4"	2	33' 11"	25' 2"	7' 6"	155.0	18.0
53	Temco	GC-1B PL	786	1	1	27	80	1½	Cont	C125-2	1	125-2550	AS-Be	F-C-Cnt	6' 1"	2	29' 4"	20' 10½"	6' 1"	131.6	9.6
54	Thorp	T-11 PL	791	1	1	19	73	1	Lyco	O-145-B2	1	65-2800	Sen	Fxd	5' 6"	2	29' 0"	17' 6"	7' 7"	105.0	6.6

ABBREVIATIONS

* —Land. ** —With 46000 lb. load
† —With 121500 lb. weight
†† —With 40500 lb. load ‡ —Flies 2—At 1900 B.H.P. and 145000 lb. takeoff weight
● —With provisions for relief crew of 2
▲ —At take-off ▲ —With 42000 load
◇ —With 84500 lb. load
◇◇ —Propeller diameters 70-72-or-74 inch
(a) —With 1075 BHP each engine
(aa) —With 1200 BHP each engine
▼ —At sea level ** —Data restricted
§ —Gallons instead of pounds
(a) —Not including fuel and oil
(aa) —Propeller diameters 69½, 70 or 72 inch
b —730 ft. fixed propeller 1140 ft. constant propeller
bb —Propeller diameters 69½, 70, 71 or 72 inch
c —910 ft. fixed propeller 1455 ft. constant propeller
d —Dual
e —With fuel detergent and water injection
(h) —Or 3322 gal. fuel capacity
m —Operating weight, empty
n —Cruising speed 250 to 280
p —With pilot
(r) —Max. range, no reserve or headwind —10,000 miles
w —Without residual fuel and oil
z —Includes 9 qts. oil and 4 gal. gasoline
Aero —Aeromatic propeller or equivalent
A-S —Aeromatic or Sensenich
Be —Beech
C-Ff-Fr —Constant speed, full feathering, full reversing
C-CS —Automatic controllable constant speed
CL —Cargo land plane
Cnt —Controllable
Cont —Continental Motors Corp.
Cst —Constant
Cst-Ff —Constant speed, full feathering
Cst-R —Constant speed-reversible
Curt —Curtiss Ele —Electric

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AND PRIVATE AIRCRAFT

WEIGHTS (Lb.)							PERFORMANCE									MAIN LANDING GEAR							
																		Auxiliary Gear					
Empty	Gross	Gross Landing	Pay Load	Useful Load	Wing Loading (Lb. per Sq. Ft.)	Power Loading (Lb. per Hp.)	Maximum Speed at Altitude	Cruising Speed at Altitude	Fuel Consumption at Cruising Speed (Lb. per Hr.)	Range in Miles at Cruising Speed	Stalling Speed at Sea Level (m.p.h.)	Initial Climb (Ft. per Min.)	Service Ceiling with Normal Load (Ft.)	Take-off Distance (Over 50 ft. obstacle no wind) (Ft.)	Landing Distance (Over 50 ft. obstacle no wind) (Ft.)	Retractable	Method of Retraction	Tail or Nose Wheel	Retractable	Type	Tread (Ft., In.)	Brake Type	Line Number
750(a)	1220	1220	.....	470	7.17	18.8	100-SL	90-SL	27.0	250	38	500	12000	.....	.....	N	.....	Tail	N	.....	5' 10"	Mec	1
785(a)	1220	1220	.....	435	7.17	14.3	100-SL	91-SL	32.4	220	40	850	16300	575	600	N	.....	Tail	N	.....	5' 10"	Mec	2
820(a)	1350	1350	.....	530	7.70	.....	100-SL	95-SL	32.4	400	38	600	15800	1294	1172	N	.....	Tail	N	.....	6' 0"	Mec	3
790	1300	.....	.....	.....	7.64	14.4	103-SL	92-SL	.....	315	44	750	16000	500	550	N	.....	Tail	N	Ste	.....	Mec	4
1150	2050	.....	.....	.....	10.25	.....	120-SL	105-SL	.....	445	53	600	12400	580	.....	N	.....	Tail	N	SS	.....	Hyd	5
2150	3500	.....	.....	1350	16.80	12 0	180-10000	160-10000	110.0	750	57	1200	18000	.....	.....	Y	Hyd	Nose	Y	Swi	13' 2"	Hyd	6
1580(w)	2650	2650	817	1070	14.92	16.0	184-SL	170-8000	60.0	750	56	890	17100	1690	1155	Y	Ele	Nose	Y	Ste-Swi	9' 7½"	Hyd	7
5615	8750	8750	.....	3115	25.1	10.9	229-4000	230-5000	285.0	750	78	1190	20500	1760	1460	Y	Ele	Tail	Y	SW-L	12' 11"	Disc	8
1200	2150	2150	635	950	15.3	14.3	170-SL	150-SL	57.0	725	45	(b)	20000+	(c)	330	Y	Opt	Tail	N	SS	10' 6"	Hyd	9
83800	142500	121700	30000	57326	8.14	10.2	375-25000†	320-25000†	3520	4100‡	101	11304	30000+	3950♣	3520	Y	Ele	Nose	Y	Ste	28' 6"	Hyd	10
73105	147000	121700	43000	66895	81.4	10.2	375-25000†	320-25000†	3520	4100‡	101	10404	30000+	3950♣	3520	Y	Ele	Nose	Y	Ste	28' 6"	.....	11
1020	1550	1550	.....	530	8.53	12.4	112-SL	102-SL	47.3	350	45	1000	17500	800	500	N	.....	.....	.....	.....	.....	.....	12
758	1300	.....	550	479	.....	.....	112-SL	100-SL	.....	379	40	750	16500	.....	.....	N	.....	.....	.....	.....	.....	Toe	13
770	1450	.....	530	680	9.10	17.1	120+	100+	26.2	450+	41	680	15500	.....	.....	N	.....	Tail	N	Fxd	6' 5"	Hyd	14
860	1450	1450	430	590	9.10	16.1	125+	105+	33.0	450	41	690	15500	.....	.....	N	.....	Tail	N	SS	6' 5"	Hyd	15
2050	3350	3350	.....	810	15.3	11.1	170-7000	160-7000	88.0	700+	62.5	1050	16000	1670	2020	N	.....	Tail	N	Ste	7' 11"	Disc	16
2060	3350	3350	.....	810	15.3	11.1	180-7000	165-7000	88.0	700+	62.5	1200	16300	1500	2020	N	.....	Tail	N	Ste	7' 11"	Disc	17
1200	2200	.....	760	1000	12.6	15.5	140+	120+	48.0	450	55	680	15500	2020	1755	N	.....	Tail	N	SS	.....	Hyd	18
26400	42500	38600	9300	14100	48.5	8.4	336-13500^	291-16000^	1070	800+	89	.....	30000	3970††	4140**	Y	Hyd(d)	Nose(d)	Y	St-L	28' 0"	Hyd	19
46925	108500	91300	34885	57575	75.1	11.1	340-17500	300-20000	2377	2630	100	1082	24700	3140	2950	Y	Hyd	Nose	Y	Ste	28' 2"	.....	20
48728	100000	85000	30076	51272	68.4	10.4	358-19600	310-20000	2380	3634	93	1040	25600	4150	3270	Y	Hyd	Nose	Y	Ste	24' 8"	Hyd	21
50857	91300	78000	17245	40443	62.4	10.9	361-19600	318-20000	2640	2640	90	1240	27000	3950	3040	Y	Hyd	Nose	Y	Ste	24' 8"	Hyd	22
53117	95200	78000	14443	42083	65.0	9.9	361-19600	316-20000	2380	3350	90	1150	27000	3680	3040	Y	Hyd	Nose	Y	Ste	24' 8"	Hyd	23
814	1260	1260	340	446	8.8	16.0	127-SL	107-SL	27.6	450	48	700	14000	520	250	N	.....	Nose	N	Ste	8' 0"	Disc	24
1400	838	.....	.....	562	9.80	16.4	125+	110+	4.7	430	56	560	11000	1400	700	N	.....	Nose	N	Ste	8' 0"	Disc	25
1260	800	.....	.....	460	8.80	16.8	120+	105+	4.4	430	48	700	14000	1000	550	N	.....	Nose	N	Ste	8' 0"	Disc	26
1688	2562	.....	563	874	13.2	15.5	130+-SL	118-SL	11.4§	620	57	800	14000	1100	1000	N	.....	Tail	N	Ste	9' 3"	Hyd	27
1651	.....	.....	563	874	13.2	15.5	130+-SL	118-SL	11.0§	620	57	800	14000	1100	1000	N	.....	Tail	N	Ste	9' 3"	Hyd	28
890	1350	1350	460	460	8.8	15.9	112+-SL	100+-SL	29.1	400	37	800	15000	350	287	N	.....	Tail	N	F-S-L	6' 0"	Hyd	29
3240	4525	4525	.....	1285	14.3	11.3	175-SL	130-SL	120.0	715	50	1000	15000	895	.....	Y	Hyd	Tail	Y	SW-L	7' 6"	Hyd	30
9200	12750	12750	.....	3550	28.7	10.6	215-6000	180-8000	312.0	1330	71	1290	23000	2768	2715	Y	Hyd	Nose	Y	Swi	12' 10"	Disc	31
61465(m)	94000	89500	22600	35720	57.0	9.4*	356-19500	328-23300	2900	3700	91	1500	26000	2790	3000	Y	Hyd	Nose	Y	Ste	28' 0"	Hyd	32
62215(m)	105600	89500	21850	46526	63.7	10.5*	356-19500	328-23300	2900	4500	91	1280	23800	3860	3000	Y	Hyd	Nose	Y	Ste	28' 0"	Hyd	33
113780(m)	184000	160000	33100	68000	51.0	13.1	300+-25000	260-25000	3400	5390	80	740	25000+	4320	2284	Y	Hyd	Nose	Y	Ste	40' 8"	Hyd	34
750	1260	.....	.....	510	9.0	19.4	115+	105+	24.6	300+	45	800	15000	550	400	N	.....	Tail	N	SS	6' 4"	Mec	35
810	1400	.....	.....	590	10.0	15.5	128+	115+	30.7	550+	48	850	17000	550	450	N	.....	Tail	N	SS	6' 4"	Mec	36
1340	2280	.....	.....	940	13.8	13.8	140+	130+	55.3	500+	58	900	17000	800	500	N	.....	Tail	N	SS	8' 4"	Hyd	37
26930(m)	39900	.....	9270	14814	.....	.....	311-14000	286-12000	.....	2020(r)	76	.....	33000	1565	1720	Y	.....	Nose	Y	Ste	.....	.....	38
24201(m)	43000	.....	15106	18799	.....	.....	311-14000	286-12000	.....	3890(r)	76	.....	29800	1730	1880	Y	.....	Nose	Y	Ste	.....	.....	39
3285	5000	5000	1329	1715	17.36	13.8	165-6000	155-6000	124.8	1000+	53	1000	.....	.....	.....	Y	Hyd	Nose	Y	.....	.....	Disc	40
15455	27500	27500	.....	12045	24.3	11.5	200-5000	160-5000	517.0	1750	65	1400	19800	1200	1200	N	.....	Tail	N	Swi-L	23' 3"	Hyd	41
19862	32500	32500	.....	12638	28.7	7.6	224-10600	193-11600	720	2500	66	1686	22800	1330	850	N	.....	Tail	N	Lock	23' 3"	Hyd	42
735	1220	.....	455	485	6.80	18.8	100-SL	87-SL	4.48	380	38	514	14000	590	580	N	.....	Tail	N	SS	6' 2½"	Hyd	43
750	1220	.....	.....	470	6.80	13.5	112-SL	100-SL	5.0	360	38	800	15000	500	580	N	.....	Tail	N	.....	6' 2½"	Hyd	44
820	1100	.....	.....	480	7.40	16.9	100-SL	90-SL	4.0	270	40	515	10500	900	570	N	.....	Tail	N	.....	6' 2½"	Hyd	45
650	1100	.....	.....	450	7.80	17.7	100-SL	90-SL	4.3	230	40	550	11000	800	570	N	.....	Tail	N	.....	6' 2½"	Hyd	46
1010	1850	.....	.....	840	10.2	17.1	123-SL	110-SL	7.0	500	48	580	12000	1450	1350	N	.....	Tail	N	.....	6' 2½"	Hyd	47
825	1650	.....	.....	825	11.2	16.2	125-SL	112-SL	6.28	480	50	600	11000	720	600	N	.....	Tail	N	.....	.....	Hyd	48
555	995	995	192	440	6.8	15.3	103-SL	90-SL	3.8§	284	38	560	14000	.....	.....	N	.....	Tail	N	Ste	4' 7"	Disc	49
1730	2750	.....	760	1020	14.6	14.6	157-SL	150-.....	10.5§	500	54	830	15600	1250	710	Y	Hyd	Nose	Y	Ste	8' 8½"	Hyd	50
1700(p)	2140	2140	200	835	13.8	11.8	130-6000	107-6000	9.6	350	43	1050	16000	800	900	N	.....	Tail	N	Swi-S;-L	7' 2¼"	Hyd	51
1294(z)	2400	2400	781	1106	15.8	14.5	130-SL	130-5000	66.0	554	60	580	12600	2380	1880	N	.....	Tail	N	SS	7' 0"	Hyd (d)	52
1187	1710	1710	382	523	13.0	13.7	150-SL	140-SL	48.0	425	48	1000	16000	685	380	Y	Hyd	Tail	N	SS	9' 9"	.....	53
565	1050	1050	200	485	10.0	16.1	113-SL	106-7000	25.0	400	53	900	12000	800SL	800SL	N	.....	Nose	N	Ste	7' 2"	Hyd	54

F-C—Fixed with Sensenich, constant with Aeromatic
FF—Full feathering
Frank—Franklin by Aircooled Motors Corp.
F-S-L—Fixed swivel, lockable
F-S-S-L—Fixed, swivel, steering, lockable
Fxd—Fixed
Ham—Hamilton Standard Propellers Div.
Har—Hartzell propellers
H-C—Hamilton or Curtiss
Hyd—Hydraulic
Hyd-Mc—Hydromatic
Jac—Jacobs
L-S—Lycoming or Sensenich propeller
L-H-S—Lewis, Hartzell or Sensenich propeller
Lyco—Lycoming Div., The Aviation Corp.
Man—Manual
MC—McCauley propeller
Mec—Mechanical
N—No or None
Opt—Optional
PA—Passenger Amphibian
PC-L—Passenger and Cargo, Land Plane
PC-LS—Passenger, Cargo, Land or Seaplane
PL—Passenger Land Plane
PL-S—Passenger Land or Seaplane
P&W—Pratt and Whitney
Rev—Reversible pitch
Rp-As—Reverse pitch, automatic synchronization
Rgr—Ranger engine
S—Seaplane
S-A—Sensenich or Koppers Aeromatic propellers optional
S-C—Sensenich or Curtiss
S-F—Sensenich-Fahlin
Sen—Sensenich
SL—Swivel, lockable
S-L-M—Sensenich, Lewis or McCauley propeller
S-M—Sensenich or McCauley propellers
SS—Swivel and steering
Ste—Steering
St-L—Steering, lockable
Swi—Swivel
Sw-L—Swivel, lockable
Wrt—Wright
Y—Yes

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AMERICAN

Line Number	BUS MAKE AND MODEL	GENERAL: Passenger Rating	Type City Service, Parlor, etc.	Standard Wheelbase (In.)	Overall Length (In.) Bumper to Bumper	Inside Length (In.) Passenger Compartment	Tread (In.) Front and Rear	Complete Vehicle Weight Dry (Lb.)	Standard Tire Size (In.) Front and Rear	ENGINE: Make and Model	Cycle and Fuel	Location	Number of Cylinders Bore and Stroke (In.)	Displacement (Cu. In.)	Rated Horsepower A.M.A.	Maximum Brake Hp. at Governed R.P.M.	Maximum Net Torque Lb. Ft. at Specified R.P.M.	Compression Ratio to 1	Compression Pressure (Lb.) at Specified R.P.M.	Valve Arrangement	Oiling System: Pressure to —
1	A. C. F.—Brill IC-41	37-41	Par	270	420	408½	80½ 71	20520	11.00 22	HS 190-2	4-G	UF	6 5½x6	779	66.0	220	2200	625	1300	5.60	I	acdg
2	C-36	36	CS	188½	389½	356½	79½ 71	14400	10.00 20	HS 477-1	4-G	UF	6 4½x5	477	49.0	162	2600	372	1900	6.00	I	acdg
3	C-44	44	CS	249	420	407	79½ 71	17200	11.00 20	HS 180-1	4-G	UF	6 5x6	707	60.0	208	2200	540	1400	6.00	I	acdg
4	C-44	45	Sub	249	420	407	79½ 71	18800	11.00 20	HS 190-2	4-G	UF	6 5½x6	779	66 0	220	2200	625	1300	5.60	I	abcdq
5	C-27B	27	CS	163	311	278½	82½ 74	10800	8.25 20	Int. Red 361	4-G	TR	6 4½x4½	361	40.8	126	2800	282	1200	6.30	I	abcd
6	C-31B	31	CS	196	344	311	81½ 74	11700	9.00 20	Int. Red 361	4-G	TR	6 4½x4½	361	40.8	126	2800	282	1200	6.30	I	abcd
7	P-37	37	Par	229	407½	389	80½ 72½	17000	10.00 20	Cont U6501	4-G	TR	6 4½x5½	501	48.6	170	2400	380	1200	5.90	I	abcdf
8	Aerocoach P-41	41	Par	261	420	405½	79½ 71	20000	11.00 20	Cont 56749	4-G	TR	6 5½x5½	749	69.3	240	2500	575	1400	5.73	I	abcdf
9	T-36	36	CS	210½	367	352	80½ 71½	16000	10.00 20	Cont U6501	4-G	TR	6 4½x5½	501	48.6	170	2500	385	1500		I	abcdf
10	T-45	45	CS	263½	420	405	80½ 71	17000	11.00 20	Cont R6572	4-G	TR	6 4¾x5¾	572	54.0	205	2500	485	1400	6.75	I	abcdf
11	Beaver 27PT	28	CS	154	321½	156	80½ 69¾	11500	8.25 20	Int 269		R	6 3¾x4½	269	35.0	101	3000	220	1000	6.30 114	160	I	abc
12	B-31PT	33	CS	164	331	169	80½ 69¾	11900	9.00 20	Int RED361	4-G	R	6 4½x4½	361	44.0	126	2800	282	1200	6.30 110	160	I	abcdefg
13	B-35PT	37	CS	188	354	192	80½ 69¾	12500	9.00 20	Int RED450	4-G	R	6 4¾x5	451	52.0	148	2600	362	1000	6.30 122	160	I	abcdefg
14	Beck Steeliner	24	Par	190	322	282	76 68		8.25 20	Int BLD269	4-G	Fr	6 3¾x4½	269	30.4	100	3000	220	1000	6.13	I	abcdf
15	Mainliner	33	Par	220	396	323	81½ 69¾		10.00 20	Int RED450	4-G	R	6 4¾x5	450	45.9	140	2400	350	1000	6.30	I	abcdf
16	Mainliner Series II	37	Par	220	420	350	80½ 71½		11.00 20	I-C R6586	4-G	R	6 4½x5½	586	55.6	200	2600	475	1000	6.00 120	150	I	abcd
17	Fitzjohn Cityliner	33-35	CS	165½	334	320	82½ 69¾	12000	10.00 20	Her JXLD	4-G	FH	6 4x4½	339	38.4	131	3000	272	1400	7.00	L	abcdq
18	Duraliner	28	Par	185½	321½	286	77½ 65½	12000	9.00 20	Her JXLD	4-G	FH	6 4x4½	339	38.4	131	3000	272	1400	7.00	L	abcdq
19	Fluible 37C1-49	37	Par	231	418½	356	80½ 71	17250	10.00 20	Che 4-G		R	6 3¾x3½	470	60.8	188	3400	384	††	6.62	I	adf
20	25B1-49	25	Par	182	358½	252	80½ 69¾	12800	9.00 20	Bui FB320	4-G	R	8 3½x4½	320	37.8	165	3150	278	2200	6.70	I	acdf
21	25C1-49	25	Par	182	358½	252	78 69¾	11330	8.25 20	Che 4-G		R	6 3¾x3½	235	30.4	93	3400	192	††	6.62	I	adf
22	23B3-49	23	Par	218	395½	288	80½ 69¾	13450	9.00 20	Bui FB320	4-G	R	8 3½x4½	320	37.8	165	3150	278	2200	6.70	I	acdf
23	29B1-49	29	Par	218	395½	288	80½ 69¾	13390	9.00 20	Bui FB320	4-G	R	8 3½x4½	320	37.8	165	3150	278	2200	6.70	I	acdf
24	23B2-49	23	Par	218	395½	288	80½ 69¾	13450	9.00 20	Bui FB320	4-G	R	8 3½x4½	320	37.8	165	3150	278	2200	6.70	I	acdf
25	21C1-49	21	Par	146	323½	216	78 69¾	10600	8.25 20	Che 4-G		R	6 3¾x3½	235	30.4	93	3400	192	††	6.62	I	adf
26	33B7-49	33		212	395½	288	80½ 69¾	20709	9.00 20	Bui FB320	4-G	R	8 3½x4½	320	37.8	165	3150	278	2200	6.70	I	acdf
27	21B1 & 29B6-49	21	Par	146	287½	252	80½ 69¾	11140	8.25 20	Bui FB320	4-G	R	8 3½x4½	320	37.8	165	3150	278	2200	6.70	I	acdf
28	29HD1-49	29	Par	218	395½	288	80½ 69¾	15100	9.00 20	Her DWXLD	4-G	R	6 4¼x5	426	43.3	142	2600	330	1700	15.0	I	abcf
29	GMC TDM3209	32	CS	182½	341½	308	80½ 72½	13885	9.00 20	GMD 4-71	2-D	TR	6 4½x5	284	28.5	133	2000	400	1200	17.1 500	1000	I	abcdfg
30	TGM3209	32	CS	182½	341½	308	80½ 72½	13490	9.00 20	Own 477	4-G	TR	6 4½x5	477	48.6	135	2600	382	1000	6.00 140	1000	I	abcdfgh
31	TDM3612	36	CS	210½	369½	337	80½ 72½	14380	9.00 20	GMD 4-71	2-D	TR	6 4½x5	284	28.9	133	2000	400	1200	17.1 500	1000	I	abcdfg
32	TGM3612	36	CS	210½	369½	337	80½ 72½	13965	9.00 20	Own 477	4-G	TR	6 4½x5	477	48.6	135	2600	382	1000	6.00 140	1000	I	abcdfgh
33	TDM4010	40	CS	238½	396	366	79½ 72½	15760	10.00 20	GMD 6-71	2-D	TR	6 4½x5	426	43.3	170	2000	545	1000	17.1 500	1000	I	abcdfgh
34	TDM4509	45	CS	238½	420	390	79½ 72½	16115	10.00 20	GMD 6-71	2-D	TR	6 4½x5	426	43.3	170	2000	545	1000	17.1 500	1000	I	abcdfgh
35	PD-2903	29	Par	218	395	265	81½ 73	13925	9.00 20	GMD 4-71	2-D	R	4 4½x5	284	28.9	113	2000	360	1200	17.1 500	1000	I	abcdfg
36	PD-2904	29	Par	218	395	295	81½ 73	13136	9.00 20	Own 426	4-G	R	6 4½x5	426	43.3	145	2600	345	800	6.00 145	1000	I	acdfh
37	PDA3703	37	Par	239	420	396	80½ 72½	16820	10.00 20	GMD 4-71	2-D	R	4 4½x5	284	28.9	147	2000	425	1200	17.1 500	1000	I	abcdfg
38	PDA4101	41	Par	247	420	387	79½ 70½	18180	11.00 20	GMD 6-71	2-D	TR	6 4½x5	426	43.3	200	2000	600	1200	17.1 500	1000	I	abcdf
39	TDH3209	32	CS	182½	341½	308	80½ 72½	13790	9.00 20	GMD 4-71	2-D	TR	4 4½x5	284	28.9	133	2000	400	1200	17.1 500	1000	I	abcdfg
40	TGH3209	32	CS	182½	341½	308	80½ 72½	13495	9.00 20	Own 477	4-G	TR	6 4½x5	477	48.6	135	2600	382	1000	6.0 140	1000	I	abcdfgh
41	TDH3612	36	CS	210½	369½	337	80½ 72½	14275	9.00 20	GMD 4-71	2-D	TR	4 4½x5	284	28.9	133	2000	400	1200	17.1 500	1000	I	abcdfg
42	TGH3612	36	CS	210½	369½	337	80½ 72½	13980	9.00 20	Own 477	4-G	TR	6 4½x5	477	48.6	135	2600	382	1000	6.0 140	1000	I	abcdfgh
43	TDH4010	40	CS	238½	396	366	79½ 72½	15645	10.00 20	GMD 6-71	2-D	TR	6 4½x5	426	43.3	170	2000	545	1000	17.1 500	1000	I	abcdfgh
44	TDH4509	45	CS	238½	421½	390	79½ 72½	15995	10.00 20	GMD 6-71	2-D	TR	6 4½x5	426	43.3	170	2000	545	1000	17.1 500	1000	I	abcdfgh
45	TDH5101	55	CS	276½	503½	470½	81½ 70½	17565	11.00 20	GMD 6-71	2-D	TR	6 4½x5	426	43.3	200	2000	600	1200	17.1 500	1000	I	abcdfgh
46	TDH5502	55	CS	276½	503½	470½	81½ 70½	18010	11.00 20	GMD 6-71	2-D	TR	6 4½x5	426	43.3	200	2000	600	1200	17.1 500	1000	I	abcdfgh
47	Kalamazoo Cruiser 49	29		194	316		70 66		8.25 20	Int K-7	4-G	FH	6 3½x4½	269	30.4	101	3000	222	1600	6.30	I	abcdf
48	Mack C33	33	CS	180	344	313	79½ 71½	15120	10.00 20	Own EN510A	4-G	TR	6 4½x5½	510	47.3	158	2400	400	1000	6.07 135	1000	I	acdeh
49	C37	37	CS	213½	377½	346½	79½ 71½	15725	10.00 20	Own EN510A	4-G	TR	6 4½x5½	510	47.3	158	2400	400	1000	6.07 135	1000	I	acdeh
50	C41	41	CS	237½	396½	360½	80½ 71½	17950	11.00 22	Own EN672	4-D	TR	6 4¾x6	672	57.0	187	2000	535	1150	6.15	I	acdeh
51	C41—Diesel	41	CS	237½	396½	366½	80½ 71½	18370	11.00 22	Own EN672	4-D	TR	6 4¾x6	672	57.0	165	2000	480	1200	14.7	I	acdeh
52	C45	45	CS	261½	420	390½	80½ 71½	18450	11.00 22	Own EN672	4-G	TR	6 4¾x6	672	57.0	187	2000	535	1150	6.15	I	acdeh
53	C45—Diesel	45	CS	261½	420	390½	80½ 71½	18870	11.00 22	Own END672	4-D	TR	6 4¾x6	672	57.0	165	2000	480	1200	14.7 500	1000	I	acdeh
54	C33—Diesel	33	CS	180	344	313	79½ 71½	15470	10.00 20	Own END510	4-D	TR	6 4½x5½	510	47.3	140	2400	354	1000		I	acdeh
55	C37—Diesel	37	CS	213½	377½	346½	79½ 71½	16075	10.00 20	Own END510	4-D	TR	6 4½x5½	510	47.3	140	2400	354	1000		I	acdeh
56	Pony Cruiser 1949	21-27	CP	160	261		70 66		7.50 20	Int K-7	4-G	FH	6 3½x4½	269	30.4	101	3000	222	1600	6.30	I	abcdf
57	Reo 37-TA	37-40	CS	188	373½	333½	80 69¾	13150	10.00 20	Cont TH6427	4-G	UFA	6 4½x4½	427	44.6	146	2600	334	1300	6.05 110	150	I	acdfgh
58	37-CA	37-40	CS	186	373½	333½	80 69¾	13150	10.00 20	Cont TH6427	4-G	UFA	6 4½x4½	427	44.6	146	2600	334	1300	6.05 110	150	I	acdfgh
59	Southern Coach F-31	32	CS	175	321½	305	81½ 69¾	12800	9.00 20	Wau 6MZA	4-G	UFA	6 4½x4¾	404		115	2200	305	1300	5.90	L	abcdegh
60	F-35	35	CS	196	356½	340	81½ 69¾	13500	10.00 20	Wau 6MZA	4-G	UFA	6 4½x4¾	404		115	2200	305	1300	5.90	L	abcdegh
61	Transit 81		CS	179	352½	301	81 73	13820	9.00 20	Cont B6427	4-G	TR	6 4½x4¾	427		127	2600	325	1200	5.70	L	abcdgh
62	Twin Coach 34-S	34	CS	189		300	80 73½	12210	10.00 20**	Own FTC180	4-G	UF	6 4½x4¾	404	43.4	180	2800	380	1600	7.30 165	120	I	abc
63	38-S		CS	189		322	80 73½	12880	10.00 20**	Own FTC180	4-G	UF	6 4½x4¾	404	43.4	180	2800	380	1600	7.30 165	120	I	abc
64	41-S		CS	211½		346	80 73½	13500	11.00 20**	Own FTC180	4-G	UF	6 4½x4¾	404	43.4	180	2800	380	1600	7.30 165	120	I	abc
65	44D	44	CS	218		367	80½ 73½	16070	11.00 20**	Own FTC180	4-G	UF	6 4½x4¾	404	43.4	180	2800	380	1600	7.30 165	120	I	abc
66	34-SW	34	CS	189		300	88 81½	13000	10.00 20**	Own FTC180	4-G	UF	6 4½x4¾	404	43.4	180	2800	380	1600	7.30 165	120	I	abc
67	44S	44	CS	218		367	80½ 73½	14300	11.00 20**	Own FTC180	4-G	UF	6 4½x4¾	404	43.4	180	2800	380	1600	7.30 165	120	I	abc
68	58D	58	CS	*	564	513½	80½ 73½	21600	10.00 20	Own FTC180	4-G	UF	6 4½x4¾	404	43.4	180	2800	380	1600	8.00 165	120	I	acf
69	50S	50	CS	240			80½ 73½		11.00 20**	Fag FTC180	4-G	UF	6 4½x4¾	404	43.4	180	2800	380	1600	7.30 165	120	I	abcd
70	White 788	40	Tr	214	395½		82 71½	16400	11.00 20	Own 24A	4-G	UFA	12 4½x4½	681	81.7	210	2700	500	1200	5.65	L	abcdefgh
71	798	45	Tr	238	419½		82 71½	17410	11.00 20	Own 24A	4-G	UFA	12 4½x4½	681	81.7	210	2700	500	1200	5.65	L	abcdefgh
72	1136 & 1136-10	36-37	CSS	191	360½		82 71½	16135	10.00 20	Own 280TA	4-G	UF	6 4¾x5	504	51.3	175	2800	410	1400	8.00	L	abcdh
73	1140 & 1140-10	40-41	CSS	214	395½		82 71½	16655	11.00 20	Own 280TA	4-G	UF	6 4¾x5	504	51.3	175	2800	410	1400	6.00	L	abcdh
74	1144 & 1144-10	44	CSS	238	419½		82 71½	17300	11.00 20	Own 24A	4-G	UF	12 4½x4½	681	81.7	210	2800	500	1400	6.10	L	abcdh

ABBREVIATIONS

**—Torque Converter.
*—Wet Weight.
•—Hundred R.P.Ms.
•—Each Engine.
°—With Leece-Neville generator.
‡—Two used.
†—City 44—Suburban 42 or 45.
‡‡—Torque Converter optional.
‡—9.00/18 Front; 7.50/20 Rear.
††—800-2000 R.P.M.
**—9.00/20 Rear.
[—Front 147½. Rear 15.
‡—There are 4 front and 4 rear springs of dimensions shown, each with 6 leaves.
¶—Front 15, Rear 16½.
▲—185" Front to Center Wheel. 195" Center to Rear Wheel.
°—Weight for 21B4, 13B5 for 29B6.
a—Main Bearings.
aa—1200 to 1600 rpm.
A—Air Pressure (Brakes).
AL—Electric Auto-Lite.
b—Wrist Pins.
BB—Borg & Beck.
bb—1200 to 1800 rpm.
BL—Brown-Lipe (Spicer Mfg. Corp.).
Bos—American Bosch Corp.
Bui—Buick Motors Div.
c—Connecting Rods.
Ce—Centrifugal.
Car—Carter Carburetor.
Che—Chevrolet Motor Div.
Chr—Chrysler.
Cla—Clark Equipment Co.
Cont—Continental.
CP—City Service and Parlor.
CS—City service.
CSS—City service and Suburban.
d—Camshaft.
D—Diesel or heavy oil.
DD—Dual Downdraft.
Dn—Dayton Steel Foundry Co.
Do—Downdraft.
DR—Delco-Remy Div.
Ds—Drive Shaft.
e—Accessory Drive.
f—Valve Lifters or Rocker Arms and Shafts.
F—Ford.
F-G—Ford-Gemmer.
Fag—Fageo Product.
FH—Front end, under hood.

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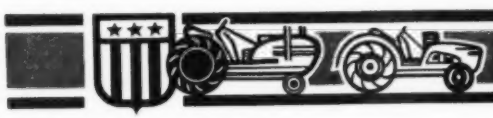
BUS CHASSIS

FUEL SYSTEM			ELECTRICAL SYSTEM			Gov-ernor			TRANSMISSION				Uni-versals	REAR AXLE			BRAKES				SPRINGS				RUNNING GEAR			
Carburetor or Injector Pump				Battery													Service			Hand	Front		Rear					
Make and Type	Size (In.)	Tank Capacity (Gal.)	Ignition System—Make	Generator and Starter—Make	Voltage and Amp. Hours Capacity	Type	Max. Governed Speed—M.P.H.	Clutch—Make and Size (In. diam.)	Make	No. of Forward Speeds	Low Speed Ratio to 1	Type Number	Size of Series	Make and Model	Standard Gear Ratio to 1	Type of Applicator	Total Lining Area (Sq. In.)	Drum Diam. (In.)	Operates on—	Total Lining Area (Sq. In.)	No. of Leaves	Length and Width (In.)	No. of Leaves	Length and Width (In.)	Front Axle—Make	Steering Gear—Make	Outside Diameter of Min. Turn. Circle (Ft.)	Line Number
Zen	Up 2	125	DR	DR	12 158A	Ce	68	Lg 17	Spi	4	4.36	M	2	1700	Tim	59070W 4.11	A	898	16½	Ds	126	‡	58 4	‡	76 4	Tim	Gem	92	1
Zen	Up 2	90	DR	DR	12 158	Ce	56	Lg 15½	Spi	3	3.80	M	2	1600	Tim	58285W 5.57	A	690	16½	Ds	111		60 4		72 4	Tim	Gem	72	2
Zen	Up 2	107	DR	DR	12 158	Ce	51	BL 17	Spi	3	3.32	M	2	1600	Tim	59070W 5.14	A	898	16½	Ds	139		66 4		76 4	Tim	Gem	85	3
Zen	Up 2	107	DR	DR	12 158	Ce	68	BL 17	Spi	4	4.36	M	2	1700	Tim	59070W 5.14	A	898	16½	Ds	139		66 4		76 4	Tim	Gem	85	4
Hol	Up 1¼	65	DR	LN	12 158	Va	26*	BB 14	Cla	3	4.06	M	2	1500	Tim	56434 5.71	A	610	14½	Ds	85		60 3		64 3	Cla	Ro	61	5
Hol	Up 1¼	65	DR	LN	12 158	Va	28*	BB 14	Cla	3	4.06	M	2	1500	Tim	56434 6.16	A	6 10	14½	Ds	85		60 3		64 3	Cla	Ro	72	6
Zen	Do 2	100	DR	DR	12 180	Su	25*	Lg 14	Cla	5	5.22	M	2	1600	Tim	58433 4.55	A	780	16½	Ds	73	10	51 4	11	64¼ 4	Tim	Ro	83	7
Zen	Do 1¾	150	DR	DR*	12 180	Su	25*	Lg 17	Spi	4	3.94	M	2	1700	Tim	R100 4.11	A	850	15	Ds	65		Special		Special	Tim	Ro		8
Zen	Do 2		DR	DR*	12 180	Su	25*	Spi 14	Spi** If	6	6.60	H	2	1600	Tim	L110B 6.16	A	636	15	Ds	60		Special		Special	Tim	Ro	66	9
Zen	Do 1¾	100	DR	DR*	12 180	Su	25*	Spi 16	Spi** If	6	6.60	H	2	1700	Rim	R110 6.16	A	850	15	Ds	65		Special		Special	Tim	Ro	83	10
Car	Do 1½	85	DR	DR	12 158	Ce		Roc 11	Spi	4	4.57	M	2	1500	Tim	H110P 6.16	A	616	16½	Ds	45	10	60 3	16	60 3	Tim	Ro	55	11
Zen	Up 1½	65	DR	DR	12 158	Su		Roc 14	BL	3	3.95	M	2	1500	Tim	H110 5.28	A	636	16½	Ds	45	14	60 3	16	60 3	Tim	Ro	59	12
Zen	Up 1¾	65	DR	DR	12 158	Su		Roc 14	BL	3	3.95	M	2	1500	Tim	L110 5.28		636	16½	Ds	45	14	60 3	16	60 3	Tim	Ro	61	13
Zen	Do	40	DR	DR	12		Ng	Roc 11	Fu	5	6.52	M	4	5-C	Tim	53588TW-X 5.14	A	417		Ds	88	10	46 2½	10	52 2½	Tim	Ro		14
Hol	DD	100	DR	DR	12		Su	24*	Roc 14	Fu	5	6.52	M	2	1500	Tim 56410-PA 5.28	A	598	17¼*	Ds	88	14	52 3	16	58 3	Tim	Ro		15
Hol	Do 2	82	DR	DR*	12 120	Su	24*	LR 15	Fu	5	8.06	M	2	1500	Tim	L110 4.11	A	696	¶	Ds	16	16	54 3	17	64 3	Tim	Ro	80	16
Zen	Up 1¾	60	DR	DR	12 160	Ce	55	WL 13	Cla	3	3.90	M	4	1400	Tim	5.57	A	594	16½	Ds	88	12	54 3	12	60 3	Tim	Ro	59	17
Zen	Up 1¾	73	DR	DR	12 160	Ce	65	WL 13	Cla	4	5.00	M	4	1400	Tim	7.85	A	796	14½	Ds	88	11	50 3	13	63½ 3	Tim	Ro	66½	18
Car	Do	115	DR	DR	12 120	Ce	69	Che 11	Spi	4	4.36	M	2	9310	Tim	L110 4.11	A		16	Ds		11	56 4	14	60 4	Tim	Ro	74.5	19
Str	Do	80	DR	DR	12 120	Ce	59	Spi 13	Spi	4	4.57	M	2	1500	Tim	H110 6.16	A		16	Ds		12	52 3	15	56 3	Tim	Ro	76	20
	Do	80	DR	DR	12 120	Su	58	Che 11	Cla	4	6.35	M	2	1400	Ti	53587TWX1 7.60	A		16	Ds		12	52 2½	15	56 2½	Tim	Ro	76	21
Str	Do	80	DR	DR	12 120	Ce	59	Spi 13	Spi	4	4.57	M	2	1500	Tim	H110 6.16	A		16	Ds		12	52 3	15	56 3	Tim	Ro	82.7	22
Str	Do	80	DR	DR	12 120	Ce	59	Spi 13	Spi	4	4.57	M	2	1500	Tim	H110 6.16	A		16	Ds		12	52 3	15	56 3	Tim	Ro	82.7	23
Str	Do	80	DR	DR	12 120	Ce	59	Spi 13	Spi	4	4.57	M	2	1500	Tim	H110 6.16	A		16	Ds		12	52 3	15	56 3	Tim	Ro	82.7	24
	Do	80	DR	DR	12 120	Su	58	Che 11	Cla	4	6.35	M	2	1400	Ti	53587TWX1 5.83	A		16	Ds		12	52 2½	15	56 2½	Tim	Ro		25
Str	Do	80	DR	DR	12 120	Ce	59	Spi 13	Spi	4	4.57	M	2	1500	Tim	H110 6.16	A		16	Ds		12	52 3	15	56 3	Tim	Ro	88	26
Str	Do	80	DR	DR	12 160	Ce	59	Spi 13	Spi	4	4.57	M	2	1500	Tim	H110 6.16	A		16	Ds		12	52 3	15	56 3	Tim	Ro	88	27
Bos		80		DR	12 160	Ce	59	Spi 13	Spi	4	4.57	M	2	1500	Tim	H110 5.71	A		16	Ds		12	52 3	15	56 3	Tim	Ro	88	28
Own		85		DR	12 126A	Ce	59	Lg 17	Spi	4	4.36	M	2	1600	Tim	3.87	A	646	14½	Ds	89	9	60 4	12	62 4	Tim	Sag	66½	29
Zen	Do 1¾	85	DR	DR	12 126A	Ce	50	Lg 15½	Spi	3	3.50	M	2	1600	Tim	5.43	A	646	14½	Ds	89	9	60 4	12	62 4	Tim	Sag	66½	30
Own		85		DR	12 126A	Ce	59	Lg 17	Spi	4	4.36	M	2	1600	Tim	3.87	A	646	14½	Ds	89	9	60 4	12	62 4	Tim	Sag	73	31
Zen	Do 1¾	85	DR	DR	12 126A	Ce	47	Lg 15½	Spi	3	3.50	M	2	1600	Tim	5.83	A	646	14½	Ds	89	9	60 4	12	62 4	Tim	Sag	73	32
Own		85		DR	12 126A	Ce	61	Lg 17	Spi	4	4.36	M	2	1700	Tim	3.87	A	784	14½	Ds	104	10	60 4	13	62 4	Tim	Sag	80	33
Own		85		DR	12 126A	Ce	61	Lg 17	Spi	4	4.36	M	2	1700	Tim	3.87	A	784	14½	Ds	104	10	60 4	14	64 4	Tim	Sag	80	34
Own		110		DR	12 180A	Ce	59	Lg 15½	Cla	4	4.88	M	2	1600	Tim	3.88	A	587	14½	Ds	88½	10	49¼ 3	13	58 3½	Tim	Ro	85	35
Zen	Do 1¾	110	DR	DR	12 160	Ce	67	Lg 14	Cla	4	4.88	M	2	1500	Tim	4.11	A	587	14½	Ds	88½	10	49¼ 3	13	58 3½	Tim	Ro	85	36
Own		100		DR	12 180A	Ce	57	Lg 15½	Cla	4	4.88	M	2	1600	Tim	4.11	A	646	14½	Ds	136	10	53 4	12	67 4	Tim	Ro	96	37
Own		100		DR	12 150	Ce	67	Lg 17	Spi	4	3.86	M	2	1700	Tim	3.55	A	705	14½	Ds	125½	10	58 4	13	72 4	Tim	Ro	42	38
Own		85		DR	12 126A	Ce	45	Own 15	Own			H	2	1600	Tim	5.43	A	646	14½	Ds	89	9	60 4	12	62 4	Tim	Sag	66½	39
Zen	Do 1¾	85	DR	DR	12 126A	Ce	52	Own 15	Own			H	2	1600	Tim	5.83	A	646	14½	Ds	89	9	60 4	12	62 4	Tim	Sag	66½	40
Own		85		DR	12 126A	Ce	45	Own 15	Own			H	2	1600	Tim	5.43	A	646	14½	Ds	89	9	60 4	12	62 4	Tim	Sag	73	41
Zen	Do 1¾	85	DR	DR	12 126A	Ce	52	Own 15	Own			H	2	1600	Tim	5.83	A	646	14½	Ds	89	9	60 4	12	62 4	Tim	Sag	73	42
Own		85		DR	12 126A	Ce	47	Own 15	Own			H	2	1700	Tim	3.87	A	784	14½	Ds	104	10	60 4	13	62 4	Tim	Sag	80	43
Own		85		DR	12 126A	Ce	47	Own 15	Own			H	2	1700	Tim	5.43	A	784	14½	Ds	104	10	60 4	14	64 4	Tim	Sag	80	44
Own		85		DR	12 126A	Ce	45	Own 15	Own			H	2	1700	Tim	59145WX1 5.16	A	874	14½	Ds	104	10	60¼ 4	14	64½ 5	Tim	Sag	76	45
Own		85		DR	12 126A	Ce	45	Own 15	Own			H	2	1700	Tim	59145WX1 5.16	A	874	14½	Ds	104	12	60¼ 4	14	64½ 5	Tim	Sag	80	46
Hol	Do	31	AL	AL	6-205			Int 10⅞	Int	5	6.52	M	3		Int	R1560 5.62	H	421		Ds	75		46 2¼		54 3	Int	Ro	59	47
Zen	Up 1¾	75		DR	12 158	Ce	24*	Spi 14	Spi** If			H	2	1600	Own	RA106 Var	A	609	15	Ds	61		62 3½		62 4	Own	Gem	55	48
Zen	Up 1¾	75		DR	12 158	Ce	24*	Spi 14	Spi** If			H	2	1600	Own	RA106 Var	A	609	15	Ds	61		62 3½		62 4	Own	Gem	63½	49
Zen	DD 1¾	100	DR	DR	12 158	Ce	20*	Spi 16	Spi** If			H	2	1700	Own	RA103 Var	A	759	16½	Ds	122	11	70 4	16	62 4	Own	Gem	75	50
Bos	B	100		DR	12 200	Ce	20*	Spi 16	Spi** If			H	2	1700	Own	RA103 Var	A	759	16½	Ds	122	11	70 4	16	62 4	Own	Gem	75	51
Zen	DD 1¾	100	DR	DR		Ce	20*	Spi 16	Spi** If			H	2	1700	Own	RA103 Var	A	759	16½	Ds	122	11	70 4	16	62 4	Own	Gem	80	52
Bos	B	100		DR	12 200	Ce	20*	Spi 16	Spi** If			H	2	1700	Own	RA103 Var	A	759	16½	Ds	122	11	70 4	16	62 4	Own	Gem	80	53
Bos		75		DR	12 200	Ce	24*		Spi** If			H	2	1400	Own	RA106 Var	A	609	15	Ds	61		62 3½		62 4	Own	Gem	55	54
Bos		75		DR	12 200	Ce	24*		Spi** If			H	2	1400	Own	RA106 Var	A	609	15	Ds	61		62 3½		62 4	Own	Gem	63½	55
Hol	Do	31	AL	AL	6-205			Int 10⅞	Int	5	6.52	M	3		Int	R1560 5.62	H	421	†	Ds	75	9	46 2¼	11	54 3		Ro	59	56
Car	DD 1¼	80	DR	DR	12-160	Su	57	BB 14	Spi	3	3.80	M	2	1600	Tim	L110 6.16	A	786	16½	Ds	102	9	62 4	9	64 4	Tim	Ro	64	57
Car	DD 1½	80	DR	DR	12-160			Spi 14	Spi** 2			H	2	1600	Tim	L110 6.16	A	786	16½	Ds	102	9	62 4	9	64 4	Tim	Ro	64	58
Zen	Do 1¾	72	Op	Op	12		Ce	50 BL	14	Spi‡‡	3	3.80	M	2	1600	Ti H110DPAX1 5.28	A	576	15	Ds	96	13	62 3	13	70 3½	Tim	Ro	64	59
Zen	Do 1¾	72	Op	Op	12		Ce	50 BL	14	Spi‡‡	3	3.80	M	2	1600	Ti L110DPAX4 6.16	A	631	15	Ds	96	13	62 3	14	70 3½	Tim	Ro	68	60
Zen	Do 1¾	82	DR	DR	12-180	Su	50	BB 14	Cla	3	4.06	M	2	1600	Cla	R1253 5.57	A	500	14½	Ds	81	9	56 3	12	60 3	Cla	Ro	60	61
Hol	Do	80	DR	DR*	12-170			24* None	Spi** If		5.40	H	2	1608	Tim	J151 5.83	A	751	14½	Ds	65½	To	rsilastic	To	rsilastic	Tim	Gem	70⅞	62
Hol	Do	80	DR	DR*	12-170			24* None	Spi** If		5.40	H	2	1608	Tim	J151 5.83	A	751	14½	Ds	65½	To	rsilastic	To	rsilastic	Tim	Gem	70⅞	63
Hol	Do	80	DR	DR*	12-170			24* None	Spi** If		5.40	H	2	1608	Tim	58268 6.16	A	774	16½	Ds	65½	To	rsilastic	To	rsilastic	Tim	Gem	77⅞	64
Hol	De	125	DR	DR*	12-170			24* None	Spi** If		5.40	H	2	1608	Tim	J152 4.11	A	751	16½	Ds	65½	To	rsilastic	To	rsilastic	Tim	Gem	79⅞	65
Hol	De	80	DR	DR*	12-170			55 None	Spi** If		5.40	H	2	1608	Tim	J153A1 5.83	A	751	14½	Ds	65½	To	rsilastic	To	rsilastic	Tim	Gem	70⅞	66
Hol	Do	125	DR	DR*	12-170			52 None	Spi** If		5.40	H	2	1608	Tim	58268C3 6.16	A	774	14½	Ds	65½	To	rsilastic	To	rsilastic	Tim	Gem	79⅞	67
Hol	De	125	DR	DR*	12-170			None	Spi** If		5.40	H	4	1608	Tim	J152 4.86	A	880½	16½	Ds	65½	To	rsilastic	To	rsilastic	Tim	Gem	31.2	68
Hol	Do	80	DR	DR	12 170	Ce	24*		Spi**		5.40	H	2	1608	Tim	58268 6.83	A	774	16½	Ds		To	rsilastic	To	rsilastic	Tim	Gem		69
Zen	Do 1¾	130	DR	DR	12 158	H	26*	13¾	Own If		7.50	H	2	1700	Own	88C 5.22	A	818	15	Ds	123	11	58½ 3½	14	64 4	Own	Ro	64½	70
Zen	Do 1¾	130	DR	DR	12 158	H	26*	13¾	Own If		7.50	H	2	1700	Own	88C 5.22	A	818	15	Ds	123	12	58½ 3½	14	64 4	Own	Ro	72	71
Zen	Ho 1½	105	DR	DR	12 158	HM	28*	None	Own 2		1.98	H	2	1700	Own	88C 5.57	A	818	15	Ds	123	10	66 4	12	72 4	Own	Ro	36½	72
Zen	Ho 1½	130	DR	DR*	12 158	HM	28*	None	Own 2		1.98	H	2	1700	Own	88C 5.57	A	818	15	Ds	123	12	66 4	12	72 4	Own	Ro	39½	73
Zen	Ho 1¾	130	DR	DR*	12 158	HM	28*	None	Own 2		1.98	H	2	1700	Own	88C 5.57	A	818	15	Ds	123	12	66 4	12	72 4	Own	Ro	41.6	74

Fo—Ford Motor Co.
F-Hol—Ford-Holley.
F-Lg—Ford-Long.
Fr—Front.
F-Spi—Ford-Spicer.
Fu—Fuller Mfg. Co.
g—Timing Gears or Chain.
G—Gasoline.
Gem—Gemmer Mfg. Co.
G.M.C.—General Motors Truck & Coach Mfg. Co.
Gro—Grove.
h—Air Compressor.
H—Hydraulic.
Ho—Horizontal.
Her—Hercules Motor Corp.
Hol—Holley.
HS—Hall-Scott Motor Car Co.
HM—Hydraulic-Mechanical.
I—In-Head (Valves).
If—Infinite.
I-C—International or Continental.
Is—In head and side (Fr.).
Int—International Harvester Co.
L—At Side (Valves).
Lg—Long Mfg. Div.
LN—Leece-Neville (Alternator; Bendix (Starter).
LR—Lipe Rollway.
M—Mechanical.
MA—Mallory. **Mer**—Mercury.
N—No or None.
Ng—Not governed.
Op—Optional.
Par—Parker Coach.
R—Rear (Engine Location).
RG—Russ or Gemmer.
Ro—Ross Gear & Tool Co.
Roc—Rockford Drilling Machine Div.
Sag—Saginaw Steering Gear Div.
Spi—Spicer Mfg. Corp.
Str—Strombere Carburetor Div.
Su—Suction.
Sub—Suburban.
Tr—Transit Coach.
TR—Transverse at Rear.
Tim—Timken Detroit Axle Co.
UF—Under floor.
UFA—Under Floor, Amidship.
UFF—Under Floor, Forward.
Up—Updraft.
Va—Vacuum. **Var**—Various.
Wau—Waukesha.
WL—Lipe Rollway Corp.
Zen—Zenith Carburetor Div.

For page on which Directory of Manufacturers appears, see Table of Contents page 65



AMERICAN

CURRENT MODELS

Line Number	TRACTOR MAKE AND MODEL	GENERAL: Wheelbase (In.)	GENERAL: Minimum Turning Radius Outside (Ft.)	GENERAL: Ground Clearance (In.)	GENERAL: Shipping Weight with Rubber Tires (Lb.)	GENERAL: TREAD (In.) Minimum	GENERAL: TREAD (In.) Maximum	DRAWBAR: Lateral Adjustment (In.)	DRAWBAR: Height Above Ground (In.)	OVERALL DIMENSIONS: Length (In.)	OVERALL DIMENSIONS: Width (In.)	OVERALL DIMENSIONS: Height To Highest Point (In.)	WHEELS: Standard Equipment	WHEELS: STEEL Diam. and Face: Front (In.)	WHEELS: STEEL Diam. and Face: Rear (In.)	WHEELS: TIRE SIZE: Front (In.)	WHEELS: TIRE SIZE: Rear (In.)	HP. RATING: Belt	HP. RATING: Drawbar	Nebraska Test Number	Power Take-off	Number of Forward Speeds	Number of Reverse Speeds	Travel Speeds at Normal Governed Engine R.P.M. (M.P.H. with Standard Wheels): First	Second	Third
1	Allis-Chalmers	1B 57¼	7	12¼	2365	40½	52½		11½	97½	62¼	54½	RT			5.00 15	9.00 24	16.31	13.54		Op	3	1	3.30	5.30	10.0
2		B 73½	7¾	21¾‡	2060	40½	52½	22¼	12½	110¼	52½	62	RT	22x4	36x6	4.00 15	8.00 24	16.31*	13.54*	302	Op	3	1	2.60	4.01	7.90
3		C 77	7	23¼†	2250	52	80	22¼	12½	114	68½	62¾	RT	22x4	36x8	4.00 15	9.00 24	23.81■	18.74■	354	Op	3	1	2.30	3.60	7.10
4		WC 87½	8	29¼†	3310	64½	75½	10½	16	128½	76½	67¼	RS	24x4	40x6	5.50 16	11.00 28	31.43■	23.58■	304	Op	4	1	2.64	3.84	5.10
5		WF 70	12	13	3490	45½	56½	10½	14¼	117½	67¼	60¼	RS	24x4	40x8	5.50 16	11.00 28	31.43■	23.58■		Op	4	1	2.60	3.80	5.10
6		G 68½	8½	17¾	1285	36	64	7¾	13	116	36*	55½	RT			4.00 12	6.00 30	10.91■	9.59■	398		3	1	1.60	2.26	3.57
7		WD 88	8½	28½	3975	56	90	8½	16¼	128	74½	81½	RT			5.50 16	11.00 28	27.60*	25.59*	399	Op	4	1	2.64	3.85	5.11
8	Avery	A 80	Piv	23	2275	48	76	20	15½	118	65	65	RT			6.00 16	10.00 24				Op	3	1	2.29	3.67	5.95
9		V 74	9	23	1667	40	40	24	13½	105	51	61¼	RT			4.00 15	7.00 24				Op	3	1	2.62	3.46	7.04
10	Case	VA 75¼	9	15¾		44	72½	16		102	65	51½	Op	25x4	38x8	5.00 15	9/24			NT	Op	4	1	2.25	3.00	4.00
11		VAC 83	8½	19¾		44	88	16		119	88	56½	Op	21x3½	42x3	5.00 15	9 32			NT	Op	4	1	2.60	3.75	4.28
12		VAI 75¼	9½	15¾		44	72	16	12½	109½	65	51½	RT			6.00 16	9/24			NT	Op	4	1	2.64	4.55	5.82
13		S 66	10			48		18		108	56¼	51¾	Op	25x4	42x8	5.00 15	11 26			NT	Op	4	1	2.50	3.50	5.00
14		SC 82½	Piv			44	80	17		126½	74½	56¾	Op	24½x4	48x2½	5.00 15	10 38			387	Op	4	1	2.50	3.50	4.75
15		SI 65¾	12			48½		N		110¾	61.9	64¾	RT			6.00 16	12.00 24			NT	Op	4	1	2.52	3.57	4.93
16		D 66¾	10			50		29		116	61½	49½	Op	28x5	42x11¼	6.00 16	12 26			349	Op	4	1	2.25	3.75	5.25
17		DC 89	Piv			48	84	21		134½	81	56½	Op	25x4	48x2½	5.50 16	11 38			340	Op	4	1	2.00	3.75	5.00
18		DI 66¾	12			52		N		111	67.2	63•	RT			6.00 16	13.00 24			NT	Op	4	1	1.90	3.62	5.00
19		LA 82	13			50½		33¼		138	72½	59¼	Op	30x6	48x12	7.50 18	14/30			NT	Op	4	1	2.75	3.75	4.75
20		LAI 82	16¾			50½		N		131	73¼	72½	RT			7.50 18	14.00 26			NT	Op	4	1	1.73	3.12	4.13
21	Ferguson	TO-20 70	8	20		2800	48	80F	17½ (in)		115	63½	51¾	Ag			4x19.00	10 28		26.50	21.77	392	St	4	1	3.32	4.57	6.29
22	Ford	8N 70	8	13		2410	48	76	20	8½	115	64½	54½	RT			4 19	10 28		26.42	22.76	393	St	4	1	3.69	4.75	6.54
23	Friday Tractor	049 79	12	12		3580	57	57	26	15	127	75	55	RT			6.00 16	13 24		46.00	34.63		Op	10	2	1.90	2.80	3.40
24	Gibson	D 46	6	14		910	33	53¾	N	13	76	53	45	RT			4.00 12	7 24						3	1	2.00	4.00	7.00
25		H 86	7½	21		3400	47	85	13	13	123	79	64	RT			5.00 15	9 32					St	4	1	2.32	3.67	5.16
26		I 94	8½	25		4000	49	90	13	15½	138	79½	67	RT			5.50 16	10 38					St	4	1	2.16	3.37	4.75
27	I.H.C. Farmall-Cub	69¾	8¼	19¾		1140	40R	56¾F	22¼	12¾	98½	47¼	62½	RT			4.00 12	7 24		9.76	8.89	386	Op	3	1	2.00	3.00	6.12
28	Farmall-Super-A	71	8½	21¾		1990	40R	68R	18¾	14¼	106½	55¼	64¼	RT			4.00 15	9 24		19.06	17.35	329	Op	4	1	2.37	3.62	4.87
29	Farmall-Super-A	71½	8¾	27		2465	44F	68R	18¾	14¼	115	60¾	70½	RT			4.00 15	9 24		19.06	17.05		Op	4	1	3.00	4.57	6.37
30	Farmall-C	81¾	7½	22½		2430	64¾F	80R	16¾	16	120¾	80	70¾	RT			4.00 15	9 36		22.18	19.63	395	Op	4	1	2.37	3.75	5.00
31	Farmall-H	88¾	8½	24¾		3325	81¾F	80R	26	16½	131¾	75½	75¾	RT	22½	3½	51x8	5.50 16	10 38	27.90	25.50	333	Op	5	1	2.50	3.37	4.12
32	Farmall-HV	91	12½	30¼		4430	60F	66F	30	17½	146½	85½	87¼	RT				6.00 20	9 36	27.50	25.00		Op	5	1	2.50	3.37	4.00
33	Farmall-M	88¾	8 5	25½		4460	81¾F	88R	26	17¾	133¼	64½	78¼	RT	22½x4		51x10	6.00 16	11 38	39.23	34.44	328	Op	5	1	2.62	3.50	4.25
34	Farmall-MD	90¼	8½	25½		4750	81¾F	88R	26	17¾	134¾	84½	78¼	RT	22½x4		51x10	6.00 16	11 38	36.56	33.04	368	Op	5	1	2.62	3.50	4.25
35	Farmall-MV	91½	12½	29¾		5505	60F	66F	30	18½	146½	85½	90¼	RT				6.00 20	10 36	38.50	33.50		Op	5	1	2.50	3.37	4.12
36	Farmall-MDV	93	12½	29¾		5795	60F	66F	30	18½	148	85½	90¼	RT				6.00 20	10 36	36.00	31.50		Op	5	1	2.50	3.37	4.12
37	McC.-D.-W-4	66¾	11	14¾		3400	45¾F	52R	18¾	14¾	114	65½	62¾	RT	22	3	40x8	5.50 16	12 26	27.89	25.67	353	Op	5	1	2.37	3.37	4.00
38	McC.-D.-W-6	76	12¾	15¾		4440	46¾F	55R	18¾	17¾	125	69¾	70¼	RT	22	4	42x10	6.00 16	13 30	38.74	33.81	355	Op	5	1	2.37	3.37	4.37
39	McC.-D.-WD-6	76	12¾	15¾		4785	46¾F	55R	18¾	17¾	125	69¾	70	RT	22	4	42x10	6.00 16	13 30	36.38	31.38	356	Op	5	1	2.37	3.37	4.37
40	McC.-D.-W-9	83¾	15	15		5865	52F	60R	18¾	17¾	134¼	75¾	72¾	RT	30x6		48x12	7.50 18	14 34	52.36	47.06	369	Op	5	1	2.37	3.25	4.62
41	McC.-D.-WD-9	83¾	15	15		6115	52R	60R	18¾	17¾	134¼	75¾	72¾	RT	30x6		48x12	7.50 18	14 34	49.17	44.78	370	Op	5	1	2.37	3.25	4.62
42	McC.-D.-WR-9	83¾	15	15½		6220	51¼F	57¾R	18¾	15	139¼	69¾	72¾	SW	34x6		54x12	7.50 18	15 34	52.00	46.00▲		Op	4▲	1	2.62	3.50	4.87
43	McC.-D.-WDR-9	83¾	15	15½		6470	51¼F	57¾R	28¼	15	139¼	69¾	72¾	SW	34x6		54x12	7.50 18	15 34	49.00	43.50▲		Op	4▲	1	2.62	3.50	4.87
44	McC.-D.-O-4	66¾	11	12¾		3865	45¼F	41¾R	27¼	14¼	120¼	65½	57¼	RT				5.50 16	12 26	27.50	25.00		Op	5	1	1.50	3.12	4.00
45	McC.-D.-OS-4	66¾	11	12¾		3865	45¼F	41¾R	27¼	14¼	120¼	55¾	57¼	RT				5.50 16	12 26	27.50	25.00		Op	5	1	1.50	3.12	4.00
46	McC.-D.-O-6	76¼	12¾	11¾		5130	46¾F	45R	27¼	14¾	133¼	65	61½	RT				6.00 16	13 26	38.50	33.50		Op	5	1	1.50	3.12	4.12
47	McC.-D.-OS-6	76¼	12¾	11¾		4835	46¾F	45R	27¼	14¾	133¼	59¾	61½	RT				6.00 16	13 26	38.50	33.50		Op	5	1	1.50	3.12	4.12
48	McC.-D.-ODS-6	76¼	12¾	11¾		5180	46¾F	45R	27¼	14¾	133¼	59¾	61½	RT				6.00 16	13 26	36.00	31.50		Op	5	1	1.50	3.12	4.12
49	International Super-A	71½	9	15¾		2060	40R	64F	18¾	10	106¾	55¾	64½	RT				4.00 15	9 24	19.06	17.35		Op	4	1	2.30	3.60	4.70
50	Inter- I-4 Standard	68¾	10	12¼		3760	46¼			10¾	113¾	58¾	62¾	RT				5.50 16	12.00 24	27.50	25.00		Op	5	1	2.20	3.60	5.20
51	national I-6 Standard	76¼	11¾	11¾		4790	50			10¾	125¾	64	68¾	RT				6.00 16	13.00 24	38.50	34.00		Op	5	1	2.20	3.60	5.30
52	ID6 Standard	76¼	11¾	11¾		5120	50			10¾	125¾	64	68¾	RT				6.00 16	13.00 24	36.00	32.00		Op	5	1	2.20	3.60	5.30
53	I-9 Standard	83¾	14	13¾		6310	50½			12¾	132¼	67¾	69	RT				7.50 18	13.00 32	52.00	46.50		Op	5	1	2.30	3.10	5.30
54	ID9 Standard	83¾	14	13¾		6585	50½			12¾	132¼	67¾	69	RT				7.50 18	13.00 32	49.00	44.00		Op	5	1	2.30	3.10	5.30
55	Jacques-Frazer T	56	6	15		960	32	44			83	52	53	RT				4.00 12	7.50 16					6	2	0.88	1.00	1.73
56	John Deere B	90	8'7"	27		4052	56	88	26¾	17½	132¼	86½	79¾	RT				5.50 16	10.00 38	28.69	25.50	390	St	6		1.50	2.50	3.50
57	A	90	8'7"	26		4909	56	88	25½	17½	134	86½	81½	RT				5.50 16	11.00 38	39.45	35.30	384	St	6	1	2.50	3.50	4.50
58	AR	76	13½			4645	52	52	27		125¼	64	67	RT				6.00 16	13/26	30.94	27.13	378	St	4	1	2.00	3.00	4.00
59	AO	76	11½			4859	52	52	27		125¼	64	67	RT				6.00 16	13.00/26	30.33	26.52	378		4	1	2.00	3.00	4.00
60	G	91	8½			5620	60	84	24¾		137½	84¾	83½	RT				6.00 16	12 38	39.80	36.01	383		6	1	2.50	3.60	4.50
61	D	70	14			5703	55	55	39½		130½	70	85¾	RT				7.50 16	14 30	44.83	40.61	350		3	1	3.00	3.00	5.25
62	M	70	8½	21		2750	38	52	14	15	110	51	66	RT				5.00 15	9.00 24	21.42	19.19	387	St	4	1	1.62	3.12	4.25
63	Lincoln A	40	4	10		800	34	34		8½	10	72	41	42	RT				4.00 12	7.50 16	4.12	3.21		St	3	1	1.31	2.48	4.25
64	Massey-Harris Pony	66		21		1520	41	72		15			49	60	RT				4.00 15	9/24	10.34	8.31	401	Op	3	1	2.74	3.59	7.00
65	Std.-22	74¾	10	11½		2710	47	47	18¾	10¾	111	65¼	73	RT				5.00 15	10/28	26.85	17.93		Op	4	1	2.45	3.51	4.62
66	RC-22	82¾	7¼	12¾		2560	48	88	18¾	11¼	119	81	76	RT				4.00 15	10/28	26.85	17.93	403	Op	4	1	2.57	3.69	4.85
67	Std.-30	79¼	10½	9½		3960	52½	52½	11½	7¾	125¾	64¼	71¾	RT				5.00 15	11/28	28.00	20.00		Op	5	1	2.19	3.06	3.82
68	RC-30	83	8	13½		3770	52	88	11½	11¾	128	79	74¼	RT				5.00 15	10/28	28.00	20.00		Op	5	1	2.58	3.61	4.51
69	Std.-44	79¼	11	12		4500	54½	54½	11½	10¾	127¼	68¾	77½	RT				6.00 16	13/30	39.98	31.02	389	Op	5	1	2.21	3.33	4.43
70	RC-44	89¾	9	16¼		4165	52	88	11½	14½	135¼	79	80	RT				5.50 16	12/38	39.98	31.02		Op	5	1	2.48	3.75	4.97
71	44-6	89¾	9	16¼		4120	52	88	11½	14½	135¼	79	80	RT				5.50 16	12/38	36.00	27.00		Op	5	1	2.76	3.85	4.81
72	55	89¾	12	12½		7150	57	57	18¾	18¾	141½	72¼	78	RT				7.50 18	14/34	52.18	40.85	394	Op	4	1	2.96	4.22	5.21

For abbreviations see pages 148 and 149

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TRACTORS

OF WHEEL TYPE

Travel Speeds at Normal Governed Engine R.P.M. with Standard Wheels				ENGINE								FUEL									BELT PULLEY			CAPACITIES						
Fourth	Fifth	Sixth	Reverse	Make and Model	Number of Cylinders · Bore and Stroke (In.)	Piston Disp. (Cu. In.)	R.P.M. at Governed Speed	Valve Arrangement	Number of Main Bearings	Diameter of Main Bearings	Standard	Optional	Ignition—Make	Carburetor or Injector Pump—Make	Air Cleaner—Make	Governor—Make	Oiling System—Type	Cooling System—Type	Clutch—Make and Type	Final Drive—Type	Diameter (In.)	Face (In.)	Normal R.P.M.	Steering Type	Cooling System (Gal.)	Fuel Tank (Gal.)	Crankcase (Qts.)	Transmission (Qts.)	Final Drive Case (Qts.)	Starting Method	Line Number
			3.80	Own 1B	4-3½x3½	125	1400	I	3	2¼	G		FM	Zen	Don	Own	P	Pu	Roc	SP SG	8	5½	1054	FK	2	13	4	7	4¼	Ele	1
			3.00	Own B	4-3½x3½	125	1400	I	3	2¼	G,D		FM	Zen	Don	Own	P	Pu	Roc	SP SG	8	5½	1054	FK	2	13	4	6	11¼	Ele	2
			2.70	Own C	4-3½x3½	125	1500	I	3	2¼	G,D		FM	Zen	Don	Own	P	Pu	Roc	SP SG	8	5½	1129	SA	2	13	4	6	11¼	Ele	3
9.80			2.20	Own W	4 4x4	201	1300	I	3	2.47	G,D		FM	Zen	Uni	Own	P	Pu	Roc	SP SG	9	6½	1170	SA	3½	15	6	4	11½	Ele	4
9.80			2.20	Own W	4 4x4	201	1300	I	3	2.47	G,D		FM	Zen	Uni	Own	P	Pu	Roc	SP SG	9	6½	1170	FK	3½	15	6	4	11½	Ele	5
6.91			1.98	Cont N82	4-2⅝x3½	62	1800	L	2	2	G		DR	Mar	Don	Cont	P	TS	Roc	SP SB	6	4	1950	FK	1½	5	3½	8		Ele	6
9.80			2.21	Own WD	4 4x4	201	1400	I	3	2½	G,D		DR	Zen	Uni	Own	P	Pu	Roc	SP SG	9	6½	1260	SA	3½	15	6	17	2	Ele	7
			2.64	Herc IXB-3	4 3¼x4	132	1450	L	3	2	G		DR	Til	Vor	Han	P	TS	Roc	SP SG	8½	6½	1035		2¾	12	5	10	1½	HE	8
			3.08	Herc ZXB	4 2⅝x3	68	1800	L	3	2	G		DR	Til	Vor	Han	P	TS	Roc	SP SG	8	5½	1990	SA	1½	7	4	5	1½	HE	9
8.00			3.00	Own VA	4 3½x3¾	124	1425	I	3	2¼	G	D	Own	Mar	Vor	Own	P	Pu		SP SG	10¼	6	969	FK	3½	10	4	28	48	HE	10
9.00			3.50	Own VA	4 3½x4	124	1425	I	3	2¼	G	D	Own	Mar	Vor	Own	P	Pu		SP SG	10¼	6	969	SA	3½	10	4	28	48	HE	11
14.00			3.64	Own VA	4 3½x3¾	124	1425	I	3	2¼	G	D	Own	Mar	Vor	Own	P	Pu		SP SG	10¼	6	969	FK	3½	10	4	28	48	HE	12
10.00			2.73	Own S	4 3¾x4	154	1550	I	3	2½	G	D	Own	Zen	Uni	Own	P	Pu	TD	DO CH	9¼	6¼	1078	FK	4	15¼	5	36		HE	13
10.00			2.73	Own S	4 3¾x4	154	1550	I	3	2½	G	D	Own	Zen	Uni	Own	P	Pu	TD	DO CH	9¼	6¼	1078	SA	4	15¼	5	36		HE	14
10.03			2.82	Own S	4 3¾x4	154	1550	I	3	2½	G	D	Own	Zen	Uni	Own	P	Pu	Roc	MD CH				FK	4	14	5	36		HE	15
10.50			3.00	Own D	4 3⅞x5½	259	1200	I	3	2¼	G	D	Own	Zen	Own	Own	P	Pu	TD	DO CH	12¼	7¼	818	FK	7½	18	7	40		HE	16
10.00			2.75	Own D	4 3⅞x5½	259	1200	I	3	2¼	G	D	Own	Zen	Own	Own	P	Pu	TD	DO CH	12¼	7¼	818	SA	7½	18	7	40		HE	17
10.20			2.88	Own D	4 3⅞x5½	259	1200	I	3	2¼	G	D	Own	Zen	Own	Own	P	Pu	Roc	MD CH	12¼	7¼	818	FK	5¾	19	7	40		HE	18
10.75			3.25	Own LA	4 4⅝x6	403	1100	I	3	3	G	D	Own	Zen	Own	Own	P	Pu	TD	DO CH	13	8¼	779	FK	15½	31	12	68		HE	19
8.60			2.48	Own LA	4 4⅝x6	403	1100	I	3	3	G	D	Own	Zen	Own	Own	P	Pu		MD CH	13	8¼	779	FK	15½	31	12	68		HE	20
3.13			3.83	Own Z-120	4 3½x3¾	120	2000	I	3	2¼	G		DR	Mar	DV	Cont	P	Pu	Roc	SP SB	9	6½	1358	FK	2½	10	7	6	**	Ele	21
13.64			8.07	Own 8N	4 3½x3¾	120	m	L	3	2.25	G	D	Own	Mar	U-O	Novi	P	Pu	Lg	SP SB	9	6½	1358	DA	3	10	6	20	**	Ele	22
5.10	6.40	9.20	2.80	Chr Ind5	6 3½x4¾	218	1800	L	4	2½	G		AL	Car	Uni	Pie	P	Pu	BB	SP NP	Hel	8¾	6⅝	1025	FK	5	18½	5	6	Ele	23
			2.50	Wis AEH	1 3x3¼	23	2000	L	2		G	K	Wico	Str	Uni		NS	A	V-Belt	SB				SA		2¾	1½	1	1	Op	24
14.80			1.91	Herc 1XB3	1 3¼x4	133	1800	L	3	1.98	G	K	DR	Mar	Vor	Han	P	Pu	Roc	SP SG	9¾	7½	1487		3½	17	5	21	**	Ele	25
13.74			1.75	Herc QXD5	6 3¼x4½	230	1800	L	7	2.50	G	K	DR	Mar	Vor	Novi	P	Pu	Roc	SP SG	9¾	7½	1487		4	20	6	21	**	Ele	26
			2.25	Own	4 2¾x2¾	595	1600	L	3	1⅝	G		Own	Own	Don	Own	P	TS	RA	SP SG	9	4	1322	FK	2½	7½	3	14¼	†††	HE	27
10.00			2.87	Own	4 3x4	113	1400	Oh	3	2¼	G	K,D	Own	MS-Z	Don	Own	P	TS	RA	SP SG	8½	6	1157	FK	3¼	11	5	5½	†††	HE	28
13.25			3.75	Own	4 3x4	113	1400	Oh	3	2¼	G	K,D	Own	MS-Z	Don	Own	P	TS	RA	SP SG	8½	6	1157	FK	3¼	11	5	6	†††	HE	29
10.25			3.00	Own	4 3x4	113	1650	Oh	3	2¼	G	K,D	Own	MS-Z	Don	Own	P	TS	RA	SP SG	8½	6	1363	SA	3¼	11½	5	20		HE	30
5.12	15.82		2.87	Own	4 3¾x4½	152	1650	Oh	3	2½	G	K,D	Own	Own	Don	Own	P	Pu	RA	SP SG	9¾	7½	1019	SA	4½	17½	6	24		HE	31
5.00	15.25		2.87	Own	4 3¾x4½	152	1650	Oh	3	2½	G	K,D	Own	Own	Don	Own	P	Pu	RA	SP CH	9¾	7½	1019	FK	4½	17½	6	24		HE	32
5.12	16.25		3.12	Own	4 3⅞x5½	248	1450	Oh	3	2⅝	G	K,D	Own	Own	Don	Own	P	Pu	Roc	SP SG	11	7½	899	SA	6	21	8	52		HE	33
5.12	16.25		3.12	Own	4 3⅞x5½	248	1450	Oh	5	3⅝	O			Own	Don	Own	P	Pu	Roc	SP SG	11	7½	899	SA	6¾	20½	9	52		HE	34
5.00	16.00		3.12	Own	4 3⅞x5½	248	1450	Oh	3	2⅝	G	K,D	Own	Own	Don	Own	P	Pu	Roc	SP CH	11	7½	899	FK	6	21	8	52	†††	HE	35
5.00	16.00		3.12	Own	4 3⅞x5½	248	1450	Oh	5	3⅝	O			Own	Don	Own	P	Pu	Roc	SP CH	11	7½	899	FK	6¾	20½	9	52	†††	HE	36
5.00	14.82		2.75	Own	4 3¾x4½	152	1650	Oh	3	2½	G	K,D	Own	Own	Don	Own	P	Pu	Roc	SP SG	9¾	7½	1019	FK	4½	17½	6	24		HE	37
5.37	15.87		2.87	Own	4 3⅞x5½	248	1450	Oh	3	2⅝	G	K,D	Own	Own	Don	Own	P	Pu	Roc	SP SG	11	7½	899	FK	6¼	21	8	52		HE	38
5.37	15.87		2.87	Own	4 3⅞x5½	248	1450	Oh	5	3⅝	O			Own	Don	Own	P	Pu	Roc	SP SG	11	7½	899	FK	6¾	20½	9	52		HE	39
5.62	16.25		3.00	Own	4 4.4x5½	334	1500	Oh	3	3¼	G	K,D	Own	Own	Don	Own	P	Pu	Roc	SP SG	14	8½	707	FK	10	36	11	40		HE	40
5.62	16.25		3.00	Own	4 4.4x5½	334	1500	Oh	5	4½	O			Own	Don	Own	P	Pu	Roc	SP SG	14	8½	707	FK	11	35	11	40		HE	41
6.00	16.75		3.12	Own	4 4.4x5½	334	1500	Oh	3	3¼	G	K,D	Own	Own	Don	Own	P	Pu	Roc	SP SG	14	8½	707	FK	10	36	11	40		HE	42
6.00	16.75		3.12	Own	4 4.4x5½	334	1500	Oh	5	4½	O			Own	Don	Own	P	Pu	Roc	SP SG	14	8½	707	FK	11	35	11	40		HE	43
5.00	14.82		1.75	Own	4 3¾x4½	152	1650	Oh	3	2½	G	K,D	Own	Own	Don	Own	P	Pu	Roc	SP SG	9¾	7½	1019	FK	4½	17½	6	24		HE	44
5.00	14.82		1.75	Own	4 3¾x4½	152	1650	Oh	3	2½	G	K,D	Own	Own	Don	Own	P	Pu	Roc	SP SG	9¾	7½	1019	FK	4½	17½	6	24		HE	45
4.87	14.82		1.87	Own	4 3⅞x5½	248	1450	Oh	3	2⅝	G	K,D	Own	Own	Don	Own	P	Pu	Roc	SP SG	11	7½	899	FK	6¼	21	8	52		HE	46
4.87	14.62		1.87	Own	4 3⅞x5½	248	1450	Oh	3	2⅝	G	K,D	Own	Own	Don	Own	P	Pu	Roc	SP SG	11	7½	899	FK	6¼	21	8	52		HE	47
4.87	14.62		1.87	Own	4 3⅞x5½	248	1450	Oh	5	3⅝	O			Own	Don	Own	P	Pu	Roc	SP SG	11	7½	899	FK	6¾	20½	9	52		HE	48
9.80			2.80	Own	4 3x4	113	1400	Oh	3	2¼	G	K,D	Own	MS-Z	Don	Own	P	TS	RA	SP SG	8½	6	1157	FK	3¼	11	5	5	†††	HE	49
7.40	15.50		3.00	Own	I-4 4 3⅝x4½	152	1650	I	3	2¼	G	K,D	Own	Own	Don	Own	P	Pu	Roc	SP SG	9¾	7½	1019	FK	4½	17½	6	24	**	HE	50
7.40	14.30		2.60	Own	I-6 4 3⅞x5½	248	1450	I	3	2⅝	G	K,D	Own	Own	Don	Own	P	Pu	Roc	SP SG	11	7½	899	FK	6¼	21	8	52	**	HE	51
7.40	14.30		2.60	Own	ID-6 4 3⅞x5½	248	1450	I	5	3⅝	O			Own	Don	Own	P	Pu	Roc	SP SG	11	7½	899	FK	6¾	20½	9	52	**	HE	52
7.30	15.20		2.80	Own	I-9 4 4.4x5½	335	1500	I	3	3¼	G	K,D	Own	Own	Don	Own	P	Pu	Own	SP SG	14	8½	707	FK	10	36	11	40	**	HE	53
7.30	15.20		2.80	Own	ID-9 4 4.4x5½	335	1500	I	5	4½	O			Own	Don	Own	P	Pu	Own	SP SG	14	8½	707	FK	11	35	11	40	**	HE	54
2.29	3.67	5.98	0.49	Own B1-6	1 3x3¼	229	N	N	2		G		(p)	Til	Don	N	Fm	A	TW	DP SG	6	V		FK	N	2¼	N			Rhc	55
4.50	5.75	10.0	2.50	Own	2 4¼x5½	190	1250	I	2	2¼	G		Wico	Mar	Don	Own	P	TS	Own	SP SG	9½	7¼	1250	SA	7	14	7	16		Ele	56
5.75	7.75	13.0	4.00	Own	2 5¼x6½	321	975	I	2	2⅝	G	D	Wico	Mar	Don	Own	P	TS	Own	SP SG	12½	7¾	975	SA	8½	14	11	28		Ele	57
6.50			3.25	Own AR	2 5¼x6½	321	975	I	2	2⅝	G	D,K	Wico	Mar	Vor	Own	P	TS	Own	SP SG	12¼	7¾	975	FK	8	16	9½	32		Ele	58
6.50			3.00	Own AO	2 5¼x6½	321	975	I	2	2⅝	G	D,K	Wico	Mar	Uni	Own	P	TS	Own	SP SG	12¼	7¾	975	FK	8	16	9½	32		Ele	59
6.50	8.75	12.50	3.00	Own GM	2 6¼x7	412	975	I	2	3	D	G	Wico	Mar	Don	Own	P	TS	Own	SP SG	12¾	8½	975	FK	13	17	11	28		Ele	60
			2.00	Own D	2 6¾x7	501	900	I	2	3	D	G	E-A	Mar	Don	Own	P	TS	Own	SP SG	13¼	8½	986	FK	14	23½	13	28		Ele	61
10.0			1.62	Own M	2 4x4	101	1650		2		G		DR	Mar	Don		P	TS	Op	SP SG	6¾	6	1730	FK	4	10	5	6½		Ele	62
			1.31	Wis AEH	1 3x3¼	23	N	L	2	(r)	G		FM	SZ	Uni	Wis	CS	A	Own	WG	4	V		FK	A	3¾	1½	½	2	HC	63
			3.22	Cont N62	4 2⅝x3½	62	1800				G		AL	Mar	Don		P	TS	Roc	SP SG	6	5¾	1990	FK	1½	7	3.3	3		Ele	64
13.02			2.45	Cont F140	4 3½x4½	140	1500	L	3	2¼	G	D	AL	Mar	Don	Novi	P	Pu	BB	SP SG	9½	6	1224	FK	2¾	12	4	8	18½	Ele	65
13.68			2.57	Cont F140	4 3½x4½	140	1500	L	3	2¼	G	D	AL	Mar	Don	Novi	P	Pu	BB	SP SG	9½	6	1224	SA	2¾	12	4	8	18½	Ele	66
8.38	10.71		2.48	Cont F162	4 3½x4½	162	1500	L	3	2¼	G	D	AL	Mar	Don	Novi	P	Pu	BB	SP SG	13½	6	838	FK		20	5	24	**	Ele	67
6.31	12.63		2.93	Cont F162	4 3½x4½	162	1500	L	3	2¼	G	D	AL	Mar	Don	Novi	P	Pu	BB	SP SG	13½	6	838	SA		20	5	24	**	Ele	68
5.75	12.28		2.89	Own H260	4 3⅞x5½	260	1350	Oh	3	2⅝	G	D	AL	Zen	Don	Own	P	Pu	BB	SP SG	13½	6	863	FK	8¾	20	9	24	**	Ele	69
6.48	13.82		3.25	Own H260	4 3⅞x5½	260	1350	Oh	3	2⅝	G	D	AL	Zen	Don	Own	P	Pu	BB	SP SG	13½	6	863	SA	8¾	25	9	24	**	Ele	70
6.74	13.48		3.12	Cont F226	6 3⅞x4½	226	1500	L	4	2⅝	G		AL	Mar	Don	Novi	P	Pu	BB	SP SG	13½	6	838	SA	4	25	6	24	**	Ele	71
12.07			2.54	Own J382	4 4¼x6	382	1350	Oh	3	3¼	G	D	AL	Zen	Don	Own	P	Pu	BB	SP SG	16	8	730	FK	6½	27	11	17½	**	Ele	72

For abbreviations see pages 148 and 149

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CURRENT MODELS OF

Line Number	TRACTOR MAKE AND MODEL	GENERAL: Wheelbase (In.)	Minimum Turning Radius Outside (Ft.)	Ground Clearance (In.)	Shipping Weight with Rubber Tires (Lb.)	Tread (In.): Minimum	Tread (In.): Maximum	DRAWBAR: Lateral Adjustment (In.)	DRAWBAR: Height Above Ground (In.)	OVERALL DIMENSIONS: Length (In.)	OVERALL DIMENSIONS: Width (In.)	OVERALL DIMENSIONS: Height To Highest Point (In.)	Standard Equipment	WHEELS: STEEL Diam. and Face: Front (In.)	WHEELS: STEEL Diam. and Face: Rear (In.)	WHEELS: TIRE SIZE: Front (In.)	WHEELS: TIRE SIZE: Rear (In.)	HP. RATING: Belt	HP. RATING: Drawbar	Nebraska Test Number	Power Take-off	Number of Forward Speeds	Number of Reverse Speeds	Travel Speeds at Normal Governed Engine R.P.M. (M.P.H.) with Standard Wheels: First	Second	Third
1	M-M Standard-R	69	10	9½	3000	47½F	84R	7¾	12	109	82	61½•	RT			5.00-15	9-36	20.49	15.58	NT	Op	4	1	2.40	3.40	4.30
2	Universal-R	76	8	22†	3050	7½F	84R	7¾	12	116	82	61½•	RT			5.00-15	9-36	20.49	15.58	341	Op	4	1	2.40	3.40	4.30
3	Industrial-R	66½	12	11½	3650	47½F		N	16	104	82	63½	RT			7.50-16	12.00-24	22.00	17.00	NT	Op	4	1	2.20	3.20	4.10
4	Universal-RN	76½	7½	22	2950	52	84	7¾	12	116	82	61½•	RT			5.00-15	9-36	20.49	15.58	NT	Op	4	1	2.40	3.40	4.30
5	Universal-RTE	84½		22	3250	52	84	7¾	12	125	82	61½	RT			5.00-15	9-36	20.49	15.58	NT	Op	4	1	2.40	3.40	4.30
6	Universal-U	88	8½	25	5300	81½F	83R	15½	15	138	84½	91½	Op	24x5	50x10	6.00-16	12-38	38.48	28.32	319	Op	5	1	2.70	3.80	4.40
7	Standard-U	80	12	24	5300	50½F	56½F	15½	15	130	70	91½	Op	28x5	50x10	6.00-16	12-38	38.12	30.86	310	Op	5	1	2.70	3.80	4.40
8	Industrial-U	79½	16	14	7400	54½R		N	20	126	76	74•	RT			8.25-20	12.00-28	38.48	28.32	NT	Op	5	1	2.30	3.20	3.70
9	Standard-GTB	82½	14	11½	7000	53½F	62R	19	14½	137	77½	71	Op	34x6	50x12	7.50-18	14-34	49.00	38.00	NT	Op	5	1	2.50	3.50	4.10
10	Standard-ZAS	72¾	12	24	3750	48F		11¼	13½	124	66	65	RT			5.50-16	11-38	30.00	23.00	NT	Op	5	1	2.40	3.60	4.60
11	Universal-ZAE	90		25	4100	54R	88R	11¼	13½	136	85	73	RT			5.50-16	11-38	30.00	23.00	NT	Op	5	1	2.40	3.60	4.60
12	Universal-ZAU	83	8	25	3750	54R	88R	11¼	13½	129	85	73	RT			5.50-16	11-38	30.00	23.00	NT	Op	5	1	2.40	3.60	4.60
13	Universal-ZAN	83	8	25	3750	54R	88R	11¼	13½	129	85	73	RT			5.50-16	11-38	30.00	23.00	NT	Op	5	1	2.40	3.60	4.60
14	Industrial-UTIL	87½	17	14	7400	62½R	56F	N	20	134½	77	74	RT			8.25-20	14-28	38.12	30.86	NT	Op	5	**	2.30	3.20	3.70
15	Oliver Rowcrop-66HC	98¾		18½	2380	58	88	20½	15¾	131¾	80½	72•	RT			4.00-15	9-38			NT	Op	6	2	2.74	3.61	4.73
16	Standard-66HC	73½		11½	2330	49¾	58¾	20½	12¾	124½	59	68•	RT			4.00-15	10-24			NT	Op	6	2	2.64	3.47	4.54
17	66-Ind.	73½		10	2300	49¾	58¾	20½	11¼	124½	57¾	64½•	RT			5.00-15	9-24			NT	Op	6	2	1.94	2.56	3.35
18	Rowcrop-77HC	90¾	9½	16½	3240	60	92½	20½	15¾	139¼	80¼	74•	RT			5.50-16	11-38	29.86	22.43	404	Op	6	2	2.63	3.45	4.57
19	Standard-77HC	78¼	10½	13¼	3360	52½	92½	20½	13¾	129	64½	69•	RT			5.50-16	11-38	29.99	22.34	405	Op	6	2	2.64	3.46	4.61
20	77-Ind.	85½	13¼	13	4200	52½	82½	20½	13	127½	79	71•	RT			7.00-20	12-24			NT	Op	6	2	2.20	2.89	3.82
21	90 80		14	10½	6200	52	52	18½	15	132¾	65	80¼	SW	28x6	46x12	7.50-18	14-30	49.04	34.21	183	Op	4	1	2.23	3.32	4.32
22	99 80		14	10½	6400	52	52	18½	15	132¾	65	80¼	SW	29x6	46x12	7.50-18	14-30			NT	Op	4	1	2.23	3.32	4.32
23	900 Ind.	92½	15	12½	10400	49¼	82¼	30	15½	145	96	87	RT			7.00-20	14.00-32	63.00	50.00			4	1	2.82	5.48	9.03
24	Standard 88HC	79¼	11	12¼	4635	54	82	20½	14¼	141¼	68	68½	RT			6.00-16	13-26	44.96	38.56	391	Op	6	2	2.63	3.42	4.53
25	Rowcrop 88HC	93¾	9½	18¾	4870	47	91	20½	14¾	141¼	80¼	73½	RT			6.00-16	12-38	44.66	38.40	388	Op	6	2	2.70	3.50	4.64
26	88 Ind.	88½		12	5255	54	88	20½	13¼	141¼	82	67¼	RT			7.00-20	13.00-24			NT	Op	6	2	2.12	2.75	3.85
27	Silver King	349 83½	7	29	3350	56	84	27	15	131	72½	75	RT			7.50-16	10.00-38	34.60	22.50	NT	Op	4	1	2.67	4.10	5.93
28		444 66½	9	16½	3000	44	72	27	15	113¾	67½	73	RT			6.50-16	10.00-28	34.60	21.40	NT	Op	4	1	3.25	5.18	7.20

ABBREVIATIONS

**—Included in transmission.
†—Clearance at rear axle.
■—Rated using gasoline.
*—Rated using distillate.
‡—Clearance at front axle.
#—To top of steering wheel.
^—To top of hood.
♦—5 with rubber tires.
▼—Minimum.
††—Capacity final drive—Each case.

●●—With reversing transmission and 6 reverse speeds, from a Low Reverse of 1.5 and 5 other reverse speeds from 2 to 10.9 M.P.H.
+—Total capacity final drive cases.
♠—When equipped with pneumatic tires
A—Air. AL—Auto Lite.
Ba—Ball bearing.
BB—Borg & Beck Div.
Bos—American Bosch Corp.
Car—Carter. CH—Chain.
Chr—Chrysler.
Cont—Continental Motors.
CS—Circulating splash.
D—Distillate. DA—Divided axle.
DO—Double plate operating in oil.
DP—Double plate operating dry.
DR—Delco-Remy Div.
Don—Donaldson.
OV—Donaldson or Vortox.
E-A—Edison Splitdorf or Auto-Lite.
Ele—Electric starting.
F—Front wheel tread.
FK—Front axle knuckle.
FM—Fairbanks Morse.
Fm—Fuel mixed.
FO—Fork type. G—Gasoline.
(h)—3" Rear; Front S.A.E. 212 Roller; Center 2.75.
Han—Handy Governor Corp.
HC—Hand crank.
HE—Hand or Electric.
Hel—Helical gear.

CURRENT MODELS OF

Line Number	TRACTOR MAKE AND MODEL	Minimum Turning Radius Outside (Ft.) (Minimum Tread)	Ground Clearance (In.)	Shipping Weight (Lb.) Standard Shoe (Minimum Tread)	Tread: Minimum (In.)	Tread: Maximum (In.)	DRAWBAR: Lateral Adjustment—At Pin (In.)	DRAWBAR: Height Above Ground (In.)	OVERALL DIMENSIONS: Length (In.)	OVERALL DIMENSIONS: Width—Maximum (In.) (Minimum Tread)	OVERALL DIMENSIONS: Height to Highest Point (In.)	TRACK: Width or Shoe Standard (In.)	TRACK: Length on Ground (In.)	HP. RATING: Belt	HP. RATING: Drawbar	Power Take-off	No. of Forward Speeds	No. of Reverse Speeds	MAXIMUM DRAWBAR PULL AT NORMAL GOVERNED ENGINE R.P.M.: First Gear (Lb.)	Second Gear (Lb.)	Third Gear (Lb.)	Fourth Gear (Lb.)	Fifth Gear (Lb.)	Sixth Gear (Lb.)	Travel Speeds at Normal Governed Engine R.P.M.: First Gear (M.P.H.)	Second Gear (M.P.H.)	Third Gear (M.P.H.)	Fourth Gear (M.P.H.)
1	Allis-Chalmers HD-5	57½	11¼	10750	44	60	21	13½	125¾	62	60¾‡	13	64¼	50.25	40.26	Op	5	1	10080	5890	4200	3375	2220		1.46	2.44	3.30	3.96
2	HD-7	7	9½	13800	52	63	19½	11¾	124½	70	66¾‡	16	67	71.06	60.10	Op	4	1	12600	9705	7015	4070			1.59	2.19	2.97	5.00
3	HD-10	8½	11¾	21000	62	74	32	14¾	150½	82¼	75½	18	84½	101.62	86.63	Op	6	2	18850	14050	10850	7730	5585	3885	1.57	2.06	2.68	3.54
4	HD-19H	10½	16½	40000		84	44	19½	180¼	109¼	87½	24	106	163.00			3	1	**	‡					**	‡		
5	Caterpillar Diesel-D2	5½	9	6710	40	50	20	12	107½	58¼	57¾	12	54	32.00	38.00	Op	5	1	6250	4700	3800	3070	1960		1.70	2.50	3.00	3.60
6	Diesel-D4	6½	11½	10085	44	60	21	14¼	120½	62	60¾	13	61½	43.00	48.00	Op	5	1	9450	6990	5470	4180	2890		1.70	2.40	3.00	3.70
7	Diesel-D6	8½	12½	16725	60	74	27¾	14	149½	80½	75¼	16	85½	65.00	75.00	Op	5	4	15500	10750	7320	4730	3130		1.40	2.30	3.20	4.40
8	Diesel-D7	8½	15½	24630	74	74	36	17¼	152¼	97	80	20	93½	92.84	80.44	Op	5	4	21351	13454	9090	5994	4550		1.40	2.20	3.20	4.60
9	Diesel-D8	9½	10½	34360	78	78	43	17½	183	103¾	90	22	97½	144.00	130.00	Op	5	3	28700	21300	16800	12600	9550		1.70	2.30	2.80	3.70
10	I.H.C. T-6	5½	8¾	6750	40	50	19¾	12¼	104	53	62¼	12	58¾	38.98	32.92	Op	5	1	7652	5215	3579	2767	1756		1.50	2.20	3.10	3.80
11	TD-6	5½	8¾	7010	40	50	19¾	12¼	104	53	62¼	12	58¾	36.23	29.49	Op	5	1	7160	4929	3388	2641	1861		1.50	2.20	3.10	3.80
12	TD-9	6	10½	9300	44	60	19¾	13¼	114	59¼	66¾	13	63¼	48.69	42.98	Op	5	1	9668	6904	4586	3650	2434		1.50	2.20	3.00	3.90
13	TD-9	6	10½	9625	44	60	19¾	13¼	114	59¼	66¾	13	63¼	45.91	38.88	Op	5	1	9014	6637	4388	3351	2304		1.50	2.20	3.00	3.90
14	TD 14	7½	11¾	15550	58	74	27¾	13¼	134¼	74½	73¾	16	78¼	68.00	57.00	Op	6	2	14000	9860	7980	5560	3720	2890	1.50	2.20	2.60	3.60
15	TD-18	8½	14	22250	62	74	31½	15¾	158¾	82¼	79	20	84½	91.50	80.50	Op	6	2	19200	13400	10600	7760	5160	3900	1.60	2.20	2.70	3.60
16	TD-24	9½	13¾	37250		80	39½	17¼	182¼	102	88	22	●●	167.00	140.00	Op	8	8	33800	25800	21100	16200	11800	++	1.60	2.00	2.40	3.10
17	Oliver "CleTrac"-HG	6½	18½	3125	31	68	24	8¾	102¼	41¼	46	6	50	22.00	18.00	Op	3	1	3060	2170	1080				2.02	3.19	9.25	
18	"CleTrac"-AG-6	7½	13½	7086	42	80	21	13¼	103½	58	54	12	62	38.80	30.60	Op	3	1	6020	4180	2640				1.78	2.62	3.74	
19	"CleTrac"-AD	7½	13½	7662	42	80	21	13¼	101½	58	54	12	62	38.00	30.50	Op	3	1	6500	4920	2800				1.78	2.62	3.74	
20	"CleTrac"-BGS	8½	12	8514	44	52	14½	13¼	105	62¼	64	14	63	50.00	38.00	Op	4	2	7600	5700	4200	2000			1.80	2.63	3.44	5.40
21	"CleTrac"-BD	8½	12	9374	44	52	14½	13¼	106	62¼	64	14	63	48.09	38.05	Op	4	2	8012	5586	4127	2000			1.80	2.64	3.45	5.41
22	"CleTrac"-DG	9	12¼	12472	48	61	16½	15¼	128	69	67	16	74½	69.00	61.20	Op	4	2	11000	9350	7000	4156			1.84	2.49	3.31	5.30
23	"CleTrac"-DD	9	12¼	13233	48	61	16½	15¼	128	69	67	16	74½	67.71	61.19	Op	4	2	11816	10022	7586	4568			1.70	2.30	3.06	4.88
24	"CleTrac"-FDE	14½	18¼	29330	69		25	22¼	174½	103¼	86½	22	96	130.00	110.00	Op	4	2	26800	15900	11000	6900			1.61	2.74	3.67	4.95
25	Ustrac 21 10A		6	3425	29½		8	18	92	43¼	54	7	51½		20.40	St	4	4							0.92	1.89	3.45	5.87

ABBREVIATIONS

*—Electric starter optional.
♦—Exclusive of tail pipes.
**—Included in transmission.
●●—Track length on ground 1019⅝".
††—Capacity final drive—Each case.

♦♦—8530 lbs. in 9th gear, 6580 lbs. in 7th, 4400 lbs. in 5th.
●●—5.20 MPH in 9th gear, 6.20 MPH in 7th, 7.80 MPH in 5th.
‡‡—8 reverse speeds ranging from 1.60 to 7.70.
♠♠—192 qts. including rear main frame cases.

**—1st speed range 0-3 MPH with 36,000 lb. pull.
‡—2nd speed range 0-7 MPH with 28,000 lb. pull.
‡‡—Low reverse speed range 0-5.5 MPH with 36,000 lb. pull.

^—With converter.
Aub—Auburn.
Clu—Clutches.
Cont—Continental.
D—Distillate.
Dif—Differential.
Bos—Bosch.
Don—Donaldson.

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WHEEL TYPE—*Continued*

Travel Speeds at Normal Governed Engine R.P.M. with Standard Wheels				ENGINE									FUEL												BELT PULLEY			CAPACITIES							
Fourth	Fifth	Sixth	Reverse	Make and Model	Number of Cylinders Bore and Stroke (In.)	Piston Disp. (Cu. In.)	R.P.M. at Governed Speed	Valve Arrangement	Number of Main Bearings	Diameter of Main Bearings	Standard	Optional	Ignition—Make	Carburetor or Injector Pump—Make	Air Cleaner—Make	Governor—Make	Oiling System—Type	Cooling System—Type	Clutch—Make and Type	Final Drive—Type	Diameter (In.)	Face (In.)	Normal R.P.M.	Steering Type	Cooling System (Gal.)	Fuel Tank (Gal.)	Crankcase (Qts.)	Transmission (Qts.)	Final Drive Case (Qts.)	Starting Method	Line Number
12.30			2.70	Own EE	4-3½x4	165	1400	Ih	2	3(h)	G	D	DR	Mar	Uni	Own	P	Pu	TD SP SG		12¼	6	933	FK	3½	14	7	18	**	HE	1
12.30			2.70	Own EE	4-3½x4	165	1400	Ih	2	3(h)	G	D	DR	Mar	Uni	Own	P	Pu	TD	SP SG	12¼	6	933	SA	3½	14	7	18	**	HE	2
11.50			2.50	Own EE	4-3½x4	165	1500	Ih	2	3(h)	G	D	DR	Mar	Uni	Own	P	Pu	Roc	SP SG	12¼	6	1000	FK	3½	14	7	18	**	HE	3
12.30		..	2.70	Own EE	4-3½x4	165	1400	Ih	2	3(h)	G	D	DR	Mar	Uni	Own	P	Pu	TD	SP SG	12¼	6	933	FO	3½	14	7	18	**	HE	4
12.30			2.70	Own EE	4-3½x4	165	1400	Ih	2	3(h)	G	D	DR	Mar	Uni	Own	P	Pu	TD	SP SG	12¼	6	933	FK	3½	14	7	18	**	HE	5
6.40	14.80		2.10	Own 283A-4	4-4½x5	283	1275	I	3	2½	G	D	DR	Mar	Uni	Own	P	Pu	TD	SP SG	16	7	727	SA	6	21½	9	52	**	HE	6
6.40	14.80		2.10	Own 283A-4	4-4½x5	283	1275	I	3	2½	G	D	DR	Mar	Uni	Own	P	Pu	TD	SP SG	16	7	727	FK	6	21½	9	52	**	HE	7
5.40	12.50		1.80	Own 283A-4	4-4½x5	283	1300	I	3	2½	G	D	DR	Mar	Uni	Own	P	Pu	Roc	SP SG	16	7	741	FK	6	21½	9	52	**	HE	8
6.00	13.80		2.00	Own 403A-4	4-4½x6	403	1100	I	3	2½	G	D	DR	Mar	Don	Own	P	Pu	TD	SP SG	16	7	827	FK	12	29	9	52	**	HE	9
6.30	13.10		2.20	Own 206B-4	4-3½x5	206	1500	Ih	3	(h)	G	D	DR	Mar	Don	Own	P	Pu	TD	SP SG	15½	7	786	FK	3¾	19	7	28	**	HE	10
6.30	13.10		2.20	Own 226B-4	4-3½x5	206	1500	Ih	3	(h)	G	D	DR	Mar	Don	Own	P	Pu	TD	SP SG	15½	7	786	FK	3¾	19	7	28	**	HE	11
6.30	13.10		2.20	Own 206B-4	4-3½x5	206	1500	Ih	3	(h)	G	D	DR	Mar	Don	Own	P	Pu	TD	SP SG	15½	7	786	SA	3¾	19	7	28	**	HE	12
6.30	13.10		2.20	Own 206B-4	4-3½x5	206	1500	Ih	3	(h)	G	D	DR	Mar	Don	Own	P	Pu	TD	SP SG	15½	7	786	FO	3¾	19	7	28	**	HE	13
5.40	12.05		**	Own 283A-4	4-4½x5	283	1300	I	3	2½	G	D	DR	Mar	Uni	Own	P	Pu	Roc	SP SG	16	7	741	FK	6	21½	9	52	**	HE	14
6.23	7.36	12.69	2.86	Own	4-3¼x3½	129	1600	I	3	2¼	G	....	DR	Sch	Don	Own	PS	Pu	BB	SP SG	11⅞	7¼	987	SA	3	10	4	18	**	Ele	15
5.99	7.07	12.19	2.74	Own	4-3¼x3½	129	1600	I	3	2¼	G	....	DR	Sch	Don	Own	PS	Pu	BB	SP SG	11⅞	7¼	987	FK	3	10	4	18	**	Ele	16
4.42	8.74	15.06	2.02	Own	4-3¼x3½	129	1600	I	3	2¼	G	....	DR	Sch	Don	Own	PS	Pu	BB	SP SG	11⅞	7¼	987	FK	3	10	4	18	**	Ele	17
6.00	7.04	12.26	2.76	Own	6-3¼x3½	194	1600	I	4	2¼	G	....	DR	Sch	Don	Own	PS	Pu	BB	SP SG	11⅞	7¼	992	SA	4½	16½	5	18	**	Ele	18
6.06	7.10	12.37	2.79	Own	6-3¼x3½	194	1600	I	4	2¼	G	....	DR	Sch	Don	Own	PS	Pu	BB	SP SG	11⅞	7¼	992	FK	4½	16½	5	18	**	Ele	19
5.04	10.11	17.60	2.31	Own	6-3¼x3½	194	1600	I	4	2½	G	....	DR	Sch	Don	Own	PS	Pu	BB	SP SG	11⅞	7¼	992	FK	4½	16½	5	18	**	Ele	20
5.55			3.23	Own	4-4¾x6½	443	1125	I	3	3 DD	G	Bos	Mar	Don	Own	P	Pu	BB	SP SG	16¾	8¼	596	FK	10½	34	12	48	**	HC	21
5.55			3.23	Own	4-4¾x6½	443	1125	I	3	3	G	Bos	Mar	Don	Own	P	Pu	BB	SP SG	16¾	8¼	598	FK	10½	34	12	48	**	HC	22
17.95			4.11	Own	4-4¾x6½	443	1200	I	3	3	G	Bos	Sch	Don	Own	P	Pu	Roc	SP SG	....	....	....	FK	10½	40	12	48	**	Ele	23
5.87	7.22	12.40	4.64	Own	6-3½x4	231	1600	I	4	2⅝	G	....	DR	Sch	Don	Own	PS	Pu	BB	SP SG	11⅞	7¼	992	FK	4½	20	6	18	**	Ele	24
6.02	7.40	12.71	4.75	Own	6-3½x4	231	1600	I	4	2⅝	G	....	DR	Sch	Don	Own	PS	Pu	BB	SP SG	11⅞	7¼	992	SA	4½	20	6	18	**	Ele	25
5.72	9.82	16.89	3.73	Own	6-3½x4	231	1600	I	4	2⅝	G	....	DR	Sch	Don	Own	PS	Pu	BB	SP SG	11⅞	7¼	992	FK	4½	20	6	18	**	Ele	26
19.10			1.97	Cont F-162	4-3⅛x4⅜	162	1800	L	3	2¼	G	....	DR	Mar	Don	Pie	P	Pu	BB	SP SG	6⅛	8	1800	FO	3	11¾	5	7	**	Ele	27
23.20			2.39	Cont F-162	4-3⅛x4⅜	162	1800	L	3	2¼	G	....	DR	Mar	Don	Pie	P	Pu	BB	SP SG	6⅛	8	1800	FK	3	11¾	5	7	**	Ele	28

Herc—Hercules Motors Corp.
I—In head (Valves).
Ih—Horizontal—In head (Valves).
K—Kerosene.
L—"L" head (Valves).
Lg—Long Mfg. Co.
(m)—From 800 to 2000.
Mar—Marvel-Schebler Carb. Div.
MD—Multiple disc operating dry.
MS-Z—Marvel-Schebler or Zenith.
N—No or none.
(n)—Minimum 6¼", Maximum 32⅞".
Novi—Novi Equipment Co.
NP—New Process Co.
NS—Non-circulating splash.
NT—Not tested.
O—Diesel fuel. **Oh**—Overhead.
Op—Optional. **P**—Pressure.
(p)—Magneto—High Tension Impulse.
Pie—Pierce Governor Co.
Piv—Pivot.
PS—Pressure and splash.
Pu—Pump.
R—Rear wheel tread.
(r)—Taper roller with 1¾" shaft.
RA—Rockford-Atwood.
Rhc—Recoiling hand cable.
Roc—Rockford Drilling Mach. Div.
RT—Rubber tires. **SA**—Solid axle.
SB—Spiral bevel gear.
Sch—Marvel-Schebler Carburetor Div.
SG—Spur gear.
SP—Single plate, dry. **St**—Standard.
Str—Stromberg. **SW**—Steel wheels.
SZ—Stromberg or Zenith.
TD—Twin Disc Clutch Co.
Til—Tillotson.
TS—Thermo-Syphon.
Uni—United Air Cleaner Div.
U-O—United and Oaks products.
V—Vee type pulley.
Vor—Vortox Mfg. Co.
WG—Worm gear. **Wis**—Wisconsin.
Zen—Zenith Carburetor Div.

TRACK LAYING TYPE

Travel Speeds at Normal Governed Engine R.P.M.					ENGINE										FUEL													BELT PULLEY			CAPACITIES							
Fifth Gear (M.P.H.)	Sixth Gear (M.P.H.)	Low Reverse (M.P.H.)	High Reverse (M.P.H.)	Make and Model	Cycle	No. of Cylinders Bore and Stroke (In.)	Displacement (Cu. In.)	R.P.M. at Governed Speed	S.A.E. or Tax Hp.	Valve Arrangement	No. of Main Bearings	Diam. Main Bearings (In.)	Standard	Optional	Ignition—Make	Carburetor or Injector Pump—Make	Air Cleaner—Make	Governor—Make	Oiling System—Type	Cooling System—Type	Clutch—Make and Type	Drive Type to Traction Members	Diameter (In.)	Face (In.)	Normal R.P.M.	Steering Type	Cooling System (Gal.)	Fuel Tank (Gal.)	Crankcase (Qts.)	Transmission (Qts.)	Final Drive Case (Qts.) (Each Case)	Starting Method	Line Number
5.47	....	1.99	....	GM	2-71	2-4¼x5	142	1800	14.5	I	3	3½	O	....	No	GM	Uni	GM	P	Pu	Aub SP SG		12	8¾	963	Clu	3¾	37	8	20	12	Ele	1
....	....	1.89	....	GM	3-71	2-3-4¼x5	213	1500	21.7	I	4	3½	O	....	No	GM	Uni	GM	P	Pu	Aub SP SG		12	8¾	890	Clu	5¾	31	11	26	7	Ele	2
4.62	6.03	1.85	4.17	GM	4-71	2-4-4¼x5	284	1600	28.9	I	5	3½	O	....	No	GM	Uni	GM	P	Pu	Roc SP SG		13⅜	10	930	Clu	9¾	44	13	28	8	Ele	3
....	....	..	....	GM	6-71	2-6-4¼x5	426	1750	43.4	I	7	3½	O	....	No	GM	Uni	GM	P	Pu	TD SP SG		20	15	430	Clu	11	100	20	39	30	Ele	4
5.10	....	2.10	....	Own	D2	4-4-4x5	252	1525	25.6	I	5	2¾	D	....	....	Own	Don	Own	P	Pu	Own SP SG		12	7½	850	Clu	7¾	20	13	8	4	GE	5
5.40	....	1.90	....	Own	D4	4-4-4½x5½	350	1400	32.4	I	5	3½	D	....	....	Own	Don	Own	P	Pu	Own SP SG		13	8½	840	Clu	11	25	17	36	7	GE	6
5.80	....	1.80	5.40	Own	D6	4-6-4½x5½	525	1400	48.7	I	7	3½	D	....	....	Own	Don	Own	P	Pu	Own SP SG		13	12½	913	Clu	12¼	48	19	36	11	GE	7
6.00	....	1.60	5.40	Own	D7	4-4-5⅜x8	831	1000	52.9	I	5	13⅜	D	....	....	Own	Don	Own	P	Pu	Own SP SG		17⅝	15	692	Clu	18	65	22	40	24	GE	8
4.80	....	2.20	3.70	Own	D8	4-6-5⅜x8	1246	1000	79.3	I	7	3¾	D	....	....	Own	Don	Own	P	Pu	Own SP SG		14½	15	846	Clu	28	69	34	40	26	GE	9
5.40	....	1.70	....	Own	T-6	4-4-3⅞x5¼	248	1450	24.0	I	3	2⅝	D	G, K	Own	Don	Own	P	Pu	Roc	SP SG	12½	8½	811	Clu	9½	20	9	16	1	HE	10
5.40	....	1.70	....	Own	TD-6	4-4-3⅞x5¼	248	1450	24.0	I	5	3¾	O	....	Own	Own	Don	Own	P	Pu	Roc	SP SG	12½	8½	811	Clu	10½	20	9	16	1	HE	11
5.30	....	1.70	....	Own	T-9	4-4-4.4x5	334	1400	31.0	I	3	3¼	O	G, K	Own	Don	Own	P	Pu	Roc	SP SG	11	8½	878	Clu	12	31	11	22	1½	HE	12
5.30	....	1.70	....	Own	TD-9	4-4-4.4x5½	334	1400	31.0	I	5	4½	O	....	Own	Own	Don	Own	P	Pu	Roc	SP SG	11	8½	878	Clu	13	31	11	22	1½	HE	13
4.90	6.00	1.60	3.60	Own	TD-14	4-4-4¾x6½	461	1350	36.1	I	5	3¾	O	....	Own	Own	Don	Own	P	Pu	Roc	SP SG	11¾	11	844	Clu	19	45	16	24	3	HE	14
5.00	6.20	1.60	3.60	Own	TD-18	4-6-4¾x6½	691	1200	54.1	I	7	3½	O	....	Own	Own	Don	Own	P	Pu	Roc	SP SG	13¼	12½	750	Clu	26	60	26	30	5½	Ele	15
4.00	**	..	..	Own	TD-24	4-6-5¾x7	1090	1375	79.3	I	7	4½	O	DR	Own	Don	Own	P	Pu	Roc	DP SG					PL	37	85	30	44	9	Ele	16
....	....	2.35	....	Herc	IXK3	4-4-3¼x4	123	1700	15.6	L	3	2	G	K, D	Wi	Til	Vor	Han	P	TS	Lg SP SG		8½	8½	1038	Dif	2¾	12	5	8	¾	HC*	17
....	....	1.36	....	Cont	FZ26	4-6-3⅛x4⅜	226	1530	26.3	L	4	2⅛	G	K	Bos	Til	Vor	Novi	P	Pu	Lg DP SG		10½	8½	1130	Dif	5	18	8	32	**	HC*	18
....	....	1.36	....	Herc	DOOC	4-4-4x4½	226	1530	25.6	I	5	2⅛	G	....	....	Bos	Vor	Bos	P	Pu	Lg DP SG		10½	8½	1130	Dif	5½	18	10	32	**	Ele	19
....	....	1.80	3.44	Herc	JXD	4-6-4x4½	320	1530	38.4	L	7	2½	G	K	DR	Til	Vor	Pie	P	Pu	Lg DP SG		12	8½	1150	Dif	6	23	7	36	**	Ele	20
....	....	1.80	3.45	Herc	DJXC	4-6-3⅜x4½	298	1400	33.7	I	7	3	O	....	....	Bos	Vor	Bos	P	Pu	Lg DP SG		12	8½	1050	Dif	5	23	12	36	**	Ele	21
....	....	2.19	3.94	Herc	RXC	4-6-4⅝x5½	529	1300	51.3	L	7	3	G	....	DR	Til	Vor	Pie	P	Pu	Lg DP SG		13	11	960	Dif	10¼	30	12	52	**	Ele	22
....	....	2.02	3.64	Herc	DRXB	4-6-4⅜x5¼	474	1200	45.9	I	7	3½	O	....	....	Bos	Vor	Bos	P	Pu	Lg DP SG		13	11	884	Dif	10½	30	16	52	**	Ele	23
....	....	1.58	2.83	Herc	DFXE	4-6-5⅛x6	895	1300	75.9	I	7	4½	O	....	....	Bos	Vor	Bos	P	Pu	Lg SP PL		24½	15	535	Dif	15½	60	34	144	**	Ele	24
....	....	1.06	6.75	Cont	....	4-3x4⅜	124	1900	31.2	L	....	....	G	....	....	....	....	....	P	Pu	....		8	6	1800	....	3½	10	4	14	5½	Ele	25

DP—Double Plate, Dry.
DR—Delco-Remy.
Ele—Electric.
G—Gasoline.
GE—Independent Gas Engine.
GM—General Motors.
Han—Handy Governor Corp.
Herc—Hercules.
HE—Hand Crank or Electric.
I—In head (Valves).
K—Kerosene.
L—"L" Head.
Lg—Long Mfg.
No—No or None.
Novi—Novi Equipment Co.
O—Diesel fuel.
Op—Optional.
P—Pressure.
Pie—Pierce Governor Corp.
Pl—Planetary.
Pu—Pump.
Roc—Rockford.
SG—Spur Gear.
SP—Single Plate, Dry.
TD—Twin Disc Clutch Co.
Til—Tillotson.
TS—Thermo-Syphon.
Uni—United Air Cleaners Div.
Vor—Vortox.
Wi—Wico.

For page on which Directory of Manufacturers appears, see Table of Contents page 65

AMERICAN

Line Number	ENGINE MAKE AND MODEL	Designed for	Number of Cylinders, Bore and Stroke (in.)	MAXIMUM BRAKE Hp. at Specified R.P.M. With Bare Engine	MAXIMUM BRAKE Hp. at Specified R.P.M. With Standard Accessories	Piston Displacement (Cu. In.)	Compression Ratio	Maximum Torque at R.P.M. (Lb. Ft.), with or without Accessories	Cylinder Liners Type	Crankcase Upper Half Integral with Cylinders	VALVES Arrangement	VALVES Exhaust Head Material (S.A.E. No.)	VALVES Max. Head Diameter (In.) Intake	VALVES Max. Head Diameter (In.) Exhaust	VALVES Min. Port Diameter (In.) Intake	VALVES Min. Port Diameter (In.) Exhaust	VALVES Lift (In.) Intake	VALVES Lift (In.) Exhaust	VALVES Stem Diameter (In.) Intake	VALVES Stem Diameter (In.) Exhaust
1	Allis-Chalmers B-125	Tr,Ind	4-3⅛x3½	30-1800	27-1800	125.2	5.75	87-1100 (EA)	W	In	I	SII	1.43	1.31	1.20	1.03	.376	.378	.344	.344
2	W-201	Tr,Ind	4-4x4	44-1800	40-1800	201.1	5.50	128-1200 (EA)	W	In	I	XCR	1.68	1.50	1.50	1.32	.376	.378	.372	.372
3	U-310	Tr,Ind	4-4⅛x5	56-1400	51-1400	318.1	4.75	200-900 (EA)	W	In	I	SII	2.03	1.78	1.75	1.50	.375	.375	.372	.372
4	E-563	Tr,Ind	4-5½x6½	81-1050	74-1050	562.8	5.20	400-650 (EA)	W	In	I	SII	2.00	2.00	2.00	2.00	.440	.417	.500	.500
5	L-841	Tr,Ind	6-5½x6½	121-1050	110-1050	844.3	5.20	590-650 (EA)	W	I	In	SII	2.21	2.21	2.00	2.00	.440	.417	.500	.500
6	Autocar 377	T	6-4x5	110-2800		377.0	5.90	292-1400 (BE)	N	Se	L	SIIX10	1.90	1.78	1.68	1.56	.406	.406	.434	.498
7	447	T	6-4⅛x5½	145-2700		447.0	5.90	352-1300 (BE)	N	Se	L	SIIX10	2.12	1.93	1.93	1.79	.452	.452	.434	.498
8	501	T	6-4⅛x5½	165-2700		501.0	5.90	402-1100 (BE)	N	Se	L	SIIX10	2.12	1.93	1.93	1.79	.452	.452	.434	.498
9	Brennan 20	Ind	4-2½x3½	20-3900	15-3900	50.0	7.40	34-3200 (EA)	N	Se	L	SII	1.12	1.00	.875	.875	.250	.250	.312	.312
10	Imp. De Luxe Spec. M		4-2½x3½	25-4000	20-4000	50.0	7.40	34-3200 (EA)	N	Se	I	SII	1.12	1.00	.875	.875	.250	.250	.312	.312
11	75	T,In	6-3⅛x4½	90-3500	75-3300	230.3	6.7	175-1000 (EA)	N	In	L	SII	1.50	1.50	1.37	1.25	.343	.343	.312	.312
12	Light Six M		6-3⅛x4½	95-3200	92-3200	230.3	5.50	184-1250	N	In	L	SII	1.50	1.37	1.37	1.25	.343	.343	.312	.312
13	CE	Ind	4-4⅛x5	54-1600	45-1600	318.0	5.00	203-1000 (EA)	N	Se	L	SII	2.00	2.00	1.87	1.87	.375	.375	.375	.375
14	E-4	M	4-4⅛x5	54-1600	45-1600	318.0	5.00	203-1000 (EA)	N	Se	L	SII	2.00	2.00	1.87	1.87	.375	.375	.375	.375
15	B-70 T,B,Tr,Ind		6-4x5½	90-2000	75-2000	415.0	4.50	278-900 (EA)	N	Se	I	SII	2.12	2.12	2.00	2.00	.375	.375	.437	.437
16	100 M		6-4x5½	94-2000	80-2000	415.0	4.50	278-900 (EA)	N	Se	I	SII	2.12	2.12	2.00	2.00	.375	.375	.437	.437
17	B-100 T,B,Tr,Ind		6-4⅛x5½	94-2000	80-2000	498.0	4.50	350-1200 (EA)	N	Se	I	SII	2.12	2.12	2.00	2.00	.375	.375	.437	.437
18	125 M		6-4⅛x5½	110-2200	94-2200	498.0	6.00	350-1200 (EA)	N	Se	I	SII	2.12	2.12	2.00	2.00	.375	.375	.437	.437
19	150 M		6-4⅛x6½	150-2000	130-2000	620.3	6.00	500-1200 (EA)	N	Se	I	SII	2.50	2.50	2.12	2.12	.437	.437	.500	.500
20	Buda 4B-153	T,Tr,Ind	4-3⅛x4½	47-2800	42-2800	153.0	6.00	98-1000 (EA)	W	In	I	2112	1.50	1.28	1.37	1.12	.429	.429	.312	.312
21	4B-192	T,Tr,Ind	4-3½x4½	54-2800	49-2800	182.0	5.54	113-1200 (EA)	N	In	I	2112	1.50	1.28	1.37	1.12	.429	.429	.312	.312
22	6B-230 T,Tr,Ind		6-3⅛x4½	72-3000	65-3000	230.0	6.00	148-1000 (EA)	W	In	I	2112	1.50	1.28	1.37	1.12	.429	.429	.312	.312
23	6B-273 T,Tr,Ind		6-3½x4½	82-2800	75-2800	273.0	5.40	175-1000 (EA)	N	In	I	2112	1.50	1.28	1.37	1.12	.429	.429	.312	.312
24	HP-326 T,B,Tr,Ind		6-3⅛x4½	78-2400	66-2400	326.0	5.40	188-1000 (EA)	N	In	L	2112	1.65	1.53	1.50	1.37	.344	.344	.372	.372
25	HP-351 T,Tr,Ind		6-3⅛x5½	84-2400	71-2400	351.0	5.83	201-1000 (EA)	N	In	L	2112	1.65	1.53	1.50	1.37	.344	.344	.372	.372
26	K-428 T,B,Tr,Ind		6-4⅛x4½	107-2400	95-2400	428.0	5.33	296-1100 (EA)	N	In	L	2112	1.90	1.78	1.75	1.62	.400	.400	.372	.372
27	L-525 T,Tr,Ind		6-4⅛x5½	113-2400	94-2400	525.0	4.75	340-800 (EA)	N	In	L	2112	1.90	1.78	1.75	1.62	.400	.400	.372	.372
28	LO-525 T,B,Tr,Ind		6-4⅛x5½	157-2400	139-2400	525.0	5.00	396-1200 (EA)	N	In	L	2112	1.96	1.68	1.75	1.50	.468	.468	.372	.372
29	4-MO-645 Tr,Ind		4-5½x6½	123-1400	110-1400	645.0	5.43	460-1000 (EA)	W	In	I	2112	2.64	2.02	2.37	1.87	.540	.540	.437	.437
30	6-MO-893 T,Ind,M		6-5½x6½	189-2000	170-2000	893.0	5.50	710-1000	W	In	I	2112	2.64	2.02	2.37	1.87	.540	.540	.433	.433
31	6-MO-970 T,Ind,M		6-5½x6½	172-1400	147-1400	970.0	5.43	545-1000	W	In	I	2112	2.64	2.02	2.37	1.87	.540	.540	.433	.433
32	JL-1335 Ind		6-6½x7½	164-1000	140-1000	1334.6	4.40	780-800 (EA)	N	Se	L	2112	2.93	2.93	2.50	2.50	.438	.438	.497	.497
33	PC-1879 Ind		6-6⅜x8½	232-1000	197-1000	1879.0	4.50	1110-750 (EA)	W	In	I	2112	2.71	2.53	2.50	2.28	.703	.703	.558	.558
34	PCG-1879 Ind		6-6⅜x8½	232-1000	197-1000	1879.0		1200-750 (EA)	W	In	I	2112	2.71	2.53	2.50	2.28	.703	.703	.558	.558
35	‡PCS-1879 Ind		6-6⅜x8½	340-1200	310-1200	1879.0		1410-950 (EA)	W	In	I	2112	2.71	2.53	2.50	2.28	.703	.703	.558	.558
36	Buffalo RA-4	M,Ind	4-5⅞x7	120-1200	110-1200	759.0	4.60	525-1200 (EA)	N	Se	I	SII	3.09	2.84	2.87	2.62	.540	.540	.500	.500
37	RAB-4 M,Ind		4-6⅛x7	145-1200	130-1200	929.0	5.00	635-1200 (EA)	N	Se	I	SII	3.09	2.84	2.87	2.62	.625	.540	.500	.500
38	RA-6 M,Ind		6-5⅞x7	180-1200	160-1200	1138.0	4.60	790-1200 (EA)	N	Se	I	SII	3.09	2.84	2.87	2.62	.540	.540	.500	.500
39	RAB-6 M,Ind		6-6⅛x7	215-1200	195-1200	1393.0	5.00	955-1200 (EA)	N	Se	I	SII	3.09	2.84	2.87	2.62	.625	.540	.500	.500
40	RA-8 M,Ind		8-5⅞x7	240-1200	220-1200	1518.0	4.60	1050-1200 (EA)	N	Se	I	SII	3.09	2.84	2.87	2.62	.540	.540	.500	.500
41	RAB-8 M,Ind		8-6⅛x7	300-1200	270-1200	1858.0	5.00	1275-1200 (EA)	N	Se	I	SII	3.09	2.84	2.87	2.62	.625	.540	.500	.500
42	RABV-12 Ind		12-6⅛x7	430-1200	390-1200	2787.0	5.00	1910-1200 (EA)	W	In	I	SII	2.46	2.25	2.25	2.00	.437	.437	.437	.437
43	RABV-16 Ind		16-6⅛x7	570-1200	515-1200	3716.0	5.00	2550-1200 (EA)	W	In	I	SII	2.46	2.25	2.25	2.00	.437	.437	.437	.437
44	Chevrolet 194	T,B	6-3⅛x3⅝	93-3100	83-3000	235.5	6.72	182-1000 (EA)	N	In	I	AS	1.64	1.47	1.25	1.20	.294	.312	.341	.340
45	194 COE		6-3⅛x3⅝	90-3100	80-3000	235.5	6.72	179-1000 (EA)	N	In	I	AS	1.64	1.47	1.25	1.20	.294	.312	.341	.340
46	194 T,B		6-3⅛x3⅝	90-3300	81-3100	216.5	6.60	168-1100 (EA)	N	In	I	AS	1.64	1.47	1.25	1.20	.294	.312	.341	.340
47	194 C		6-3⅛x3⅝	90-3300	83-3200	216.5	6.60	168-1100 (EA)	N	In	I	AS	1.64	1.47	1.25	1.20	.294	.312	.341	.340
48	Chris-Craft *B M		4-3⅛x4½		60-3200	132.7	7.50	108-2400 (EA)	N	In	L	CNS	1.50	1.37	1.25	1.12	.312	.312	.310	.310
49	*K M		6-3⅛x4½		95-3200	229.7	7.35	173-1800 (EA)	N	In	L	CNS	1.60	1.39	1.46	1.25	.312	.312	.310	.310
50	*KL M		6-3⅛x4½		105-3200	236.6	7.52	190-2200 (EA)	N	In	L	CNS	1.61	1.39	1.25	1.25	.311	.311	.310	.310
51	KBL M		6-3⅛x4½		131-3800	236.6	7.52	191-3000 (EA)	N	In	L	CNS	1.61	1.39	1.25	1.25	.344	.344	.310	.310
52	*M M		6-4x4½		130-3000	320.4	7.50	239-2400 (EA)	N	In	L	SII	1.87	1.78	1.71	1.56	.356	.356	.372	.372
53	*ML M		6-4x4½		145-3000	339.2	7.90	267-2400 (EA)	N	In	L	SII	1.84	1.68	1.81	1.50	.387	.387	.372	.372
54	MBL M		6-4x4½		158-3400	339.2	7.90	266-2600 (EA)	N	In	L	SII	1.84	1.68	1.81	1.60	.387	.387	.372	.372
55	*W M		6-4⅛x4¾		160-3000	404.3	6.40	322-1500 (EA)	N	In	L	Aus	2.06	1.87	1.81	1.62	.388	.388	.372	.372
56	Chrysler Ace-M26 M		6-3⅛x4½		92-3200	217.7	6.83	178-1600 (EA)	N	In	L	XCR	1.53	1.41	1.28	1.28	.371	.389	.340	.340
57	Crown-M27 M		6-3⅛x4½		115-3200	250.6	6.80	206-1600 (EA)	N	In	L	XCR	1.72	1.53	1.43	1.37	.379	.381	.340	.340
58	Royal-M28 M		8-3⅛x4¾		141-3200	323.5	6.80	268-1600 (EA)	N	In	L	XCR	1.53	1.35	1.40	1.22	.371	.389	.340	.340
59	Climax R41	Ind	4-6x7	123-1200	112-1200	791.6	4.70	525-750 (EA)	N	Se	I	SII	2.50	2.50	2.25	2.25	.500	.500	.562	.562
60	R61	Ind	6-6x7	183-1200	165-1200	1187.4	4.70	802-700 (EA)	N	Se	I	CNS	2.50	2.50	2.25	2.25	.500	.500	.562	.562
61	R81	Ind	8-6x7	245-1200	221-1200	1582.2	4.70	1085-750 (EA)	N	Se	I	SII	2.50	2.50	2.25	2.25	.500	.500	.562	.562
62	V-425	Ind	12-6⅛x7	425-1200	380-1200	2787.0	4.90	2120-750	W	Se	I	SII	2.81	2.68	2.50	2.37	.687	.687	.562	.562
63	V-495	Ind	12-7x7	495-1200	445-1200	3232.0	4.90	2460-750	W	Se	I	SII	2.81	2.68	2.50	2.37	.687	.687	.562	.562
64	V-280	Ind	8-6⅛x7	280-1200	255-1200	1860.0	4.90	1350-800	W	Se	I	SII	2.81	2.69	2.50	2.37	.687	.687	.562	.562
65	V-330	Ind	8-7x7	330-1200	295-1200	2155.0	4.90	1570-800	W	Se	I	SII	2.81	2.68	2.50	2.37	.687	.687	.562	.562
66	Continental N-62	Ind	4-2⅝x3½	16-2200		62.0	5.40	43-1600 (BE)	N	In	L	XCR	.895	.895	.750	.750	.187	.187	.312	.312
67	Y-69	Ind	4-2⅞x3½	20-2600		68.7	4.90	47-1400 (BE)	N	In	L	Aus	1.20	1.01	1.06	.875	.296	.281	.314	.313
68	Y-4069	Tr	4-2⅞x3	27-3000		68.7	6.70	51-2000 (BE)	N	In	L	Aus	1.20	1.01	1.06	.875	.296	.281	.314	.313
69	Y-91	Ind	4-2⅞x3½	28-2600		90.9	4.50	67-1400 (BE)	N	In	L	Aus	1.20	1.01	1.06	.875	.296	.281	.314	.313
70	Y-4091 C,Tr		4-2⅞x3½	35-3000		90.9	6.10	70-1600 (BE)	N	In	L	Aus	1.20	1.01	1.06	.875	.296	.281	.314	.313
71	Y-112 Ind		4-3⅛x3½	31-2600		111.7	5.90	81-1400 (BE)	N	In	L	Aus	1.20	1.01	1.06	.875	.296	.281	.314	.313
72	Y-4112 C,Tr		4-3⅛x3½	45-3000		111.7	6.10	86-2200 (BE)	N	In	L	Aus	1.20	1.01	1.06	.875	.296	.281	.314	.313
73	F-124 Ind		4-3x4½	36-2400		123.7	4.10	91-1200 (BE)	N	...	L	Aus	1.51	1.32	1.37	1.18	.281	.281	.341	.334
74	F-4124 C,T,Tr		4-3x4½	46-3000		123.7	6.50	86-1400 (BE)	N	In	L	Aus	1.51	1.32	1.37	1.18	.281	.281	.341	.336
75	G-134 Ind		4-3⅛x4½	33-2400		134.0	4.80	104-1000 (BE)	W	...	Oh	XCR	1.32	1.20	1.18	1.09	.312	.312	.343	.349
76	F-140 Ind		4-3⅜x4½	42-2400		139.6	4.40	104-1200 (BE)	N	In	L	Aus	1.51	1.32	1.37	1.18	.281	.281	.341	.333
77	F-4140 C,T,Tr		4-3⅜x4½	52-3000		139.6	6.30	108-1400 (BE)	N	In	L	Aus	1.51	1.32	1.37	1.18	.281	.281	.341	.339
78	G-157 Ind		4-3⅝x4½	39-2400		157.0	4.80	121-1000 (BE)	W	...	Oh	XCR	1.32	1.20	1.18	1.09	.312	.312	.343	.349

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GASOLINE ENGINES

VALVES				PISTONS			CONNECTING RODS				CRANKSHAFT								CARBURETOR		OVERALL DIMENSIONS (In.)				
	Seats												Crank-Pin	MAIN BEARINGS											
														Diameter and Length (In.)											
Angle Deg.	Inserts Used?	Insert Material (S.A.E. No.)	Camshaft Drive Type	Material	Weight with Pins, Rings, Bushings (Oz.)	Piston Pin Diameter and Length (In.)	Number of Rings per Piston	Material	Center to Center Length (In.)	Weight with Bushing and Cap (Oz.)	Material	Counter Balance Used	Diameter and Length (In.)	Number	Front	Rear	Oil Pressure lb	Make	Size	Engine Weight without Carburetor or Ignition Lb.	Width	Height	Length	Clutch Housing (S.A.E. No.)	Line Number
45	N		HG	CI	42	.813x2.87	4	1040	6	29	1045	N	1.93x1.43	3	2.25x1.62	2.25x1.50	acog	Zen	⅞	360	16¼	31⅝	27	5	1
45	E	TA	HG	AI	40.1	.999x3.50	4	1040	7	42	1015	N	2.37x1.75	3	2.43x1.93	2.50x1.75	abceg	Zen	1	820	23	31⅜	33½	4	2
30	E	TA	HG	CI	99	1.31x4.06	5	1045	9	92	1045	N	2.37x2.37	3	2.50x2.31	2.50x2.75	abcdeg	Zen	1¼	985	26	37½	43¼		3
45	E	TA	HG	CI	162	1.50x4.87	4	1040	13	182	1045	N	2.75x3.24	3	3.00x3.50	3.00x4.75	abcdeg	Zen	1½	2020	27	47½	53	1	4
45	E	TA	HG	CI	162	1.50x4.87	4	1040	13	182	1045	N	2.75x3.24	4	3.30x3.50	3.00x4.75	abcdeg	Zen 2	1½	2810	29¾	63⅛	72½	1	5
45	E	71360	HG	AI	43	1.12x3.43	4	NE8640	10¼	65	CS	Y	2.37x1.44	7	3.25x1.87	3.25x2.60	abcde	Zen	1½	1230	27½	41	45	3	6
45	E	71360	HG	AI	51	1.12x3.68	4	NE8640	10¼	78	CS	Y	2.50x1.53	7	3.25x1.87	3.25x2.87	abcde	Zen	1½	1385	27½	41½	47	2	7
45	E	71360	HG	AI	57	1.12x3.93	4	NE8640	10¼	78	CS	Y	2.50x1.56	7	3.25x1.87	3.25x2.87	abcde	Hol	1⅝	1395	27½	41½	47	2	8
45	N		HG	AI	6	.625x2.00	3	1045	5¼	14	1045	Y	1.31x1.25	3	2.50x1.50	2.50x1.50	abcde	Zen	⅝	128	12⅞	17⅛	18¾		9
10	N		HG	AI	6	.625x2.00	3	1045	5¼	14	1045	N	1.31x1.25	3	2.50x1.50	2.50x1.50	abcde	Zen	1	165	12⅞	17⅛	29		10
45	Y	TS	HG	AI	23	.875x2.75	4	2320	7¾	29	1015	Y	2.06x1.25	4	2.50x1.87	2.50x1.87	abce	Str	1¼	710	18¾	22	37½		11
45	E	TS	Ch	AI	23	.875x2.75	4	2320	7¾	29	1015	Y	2.06x1.25	4	2.50x1.87	2.50x1.75	abce	Str	1¼	710	18¾	22	48½		12
45	N		HG	SS	80	1.17x1.00	4	1015	11	64	1045	N	2.50x2.50	3	2.50x4.25	2.50x3.50	abcde	Str	1¼	600	21	29¼	37½		13
45	N		HG	SS	72	1.17x4.00	5	1015	11	64	1045	N	2.50x2.50	3	2.50x4.25	2.50x3.50	abcder	Str	1¼	950	18	18	53		14
45	N		HG	SS	64	1.17x3.87	4	CNS	11	65	CNS	N	2.50x2.00	3	2.75x1.50	2.75x3.00	abce	Str	1½	800	25¼	33¾	49		15
45	N		HG	SS	64	1.17x3.87	4	AS			CNS	N	2.50x2.00	3	2.75x1.50	2.75x3.00	abceg	Str	1½	830	18¼	24¾	65		16
45	N		HG	SS	70	1.25x3.87	5	CNS	11	65	CNS	N	2.50x2.00	3	2.75x1.50	2.75x3.00	abce	Str	1½	875	25¼	33¾	49		17
45	N		HG	SS	70	1.25x3.87	5	AS	11	65	CNS	N	2.50x2.00	3	2.75x1.50	2.75x1.50	abceg	Str	1½	900	19¼	24¾	65		18
45	N		BG	SS	72	1.37x4.00	5	AS	12	80	CNS	Y	2.62x2.67	7	2.62x5.00	2.63x3.50	abcd	Str	1⅝	1450	20	30	74		19
45	N		HG	CI		1.00x2.84	4	CS	7¼		1045	N	2.00x1.31	3	2.50x1.25	2.50x1.75	abcdeg	Zen	1	500	18½	26¾	30½	3	20
45	N		HG	CI		1.00x3.09	4	CS	7¼		1045	N	2.00x1.31	3	2.50x1.25	2.50x1.75	abcdeg	Zen	1¼	520	18½	26¾	35½	3	21
45	N		HG	CI		1.00x	4	1045	7¼		1045	N	2.00x1.31	7	2.50x1.25	2.50x1.75	abcdeg	Zen	1	625	18½	26¾	33½	3	22
45	N		HG	CI		1.03x3.09	4	1045	7¼		1045	N	2.00x1.31	7	2.50x1.25	2.50x1.75	abcdeg	Zen	1¼	635	18½	26¾	33½	3	23
45	E	DC	HG	CI	42	1.12x3.25	4	CS	9	42	CS	N	2.12x1.62	7	3.00x1.50	3.00x2.12	abcde	Zen	1½	895	25¼	33½	39½	3	24
45	E	DC	HG	CI	42	1.12x3.25	4	CS	9	42	CS	N	2.12x1.62	7	3.00x1.50	3.00x2.12	abcde	Zen	1½	905	25¼	33½	39½	3	25
45	E	DC	HG	AI	68	1.25x3.82	4	CS	9	53	CS	N	2.37x1.75	7	3.00x1.75	3.00x2.50	abcde	Zen	1½	935	25¼	33½	47½	3	26
45	E	DC	HG	CI	88	1.25x3.81	4	CS	11	86	CS	N	2.37x1.75	7	3.00x1.75	3.00x2.50	abcde	Zen	1½	950	25¼	33½	47½	3	27
30	E	JM	HG	AI	88	1.25x3.81	5	AS	11	78	CS	N	2.37x1.75	7	3.00x1.75	3.00x2.50	abcdeg	Zen	1½	1195	27½	38½	49½	3	28
30	E	Jad	HG	CI	152	1.75x4.75	5	1040	12½	171	1045	N	3.25x2.12	5	3.75x3.00	3.75x2.75	abcdeg	Zen	2	1925	30½	48¼	44½	0	29
30	E	Jad	HG	CI	152	1.75x4.75	5	1040	12½	171	1045	N	3.25x2.12	7	3.75x3.00	3.75x2.75	abcdeg	Zen	2	2400	28¼	48¼	58½	1	30
30	E	Jad	HG	CI	152	1.75x4.75	5	1040	12½	171	1045	N	3.25x2.12	7	3.75x3.75	3.75x2.75	abcdeg	Zen	2	2400	48¼	58½	58½	1	31
30	E	DC	HG	CI	199	2.00x5.33	4	AS	15¼	239	CS	Y	3.50x3.31	4	3.50x1.75	3.50x4.75	abcde	Zen	2	3700	28¼	43	73½	0	32
45	E	DC	HG	Ala	283	2.75x5.53	5	CS	17¾	430	CS	Y	4.25x3.25	7	4.50x2.69	3.75x3.48	abcdeg	Zen 2	2	9300	48	68⅛	86½	00	33
45	E	DC	HG	Ala	283	2.75x5.53	5	CS	17¾	430	CS	Y	4.25x3.25	7	4.50x2.69	3.75x3.48	abcdeg	Ens	2	9300	48	68⅛	89½	00	34
45	E	DC	HG	AI	283	2.75x5.53	5	1035	17¾	430	1045	N	4.25x3.25	7	4.50x2.69	4.50x3.48	abcde	Ens	2					00	35
45	E	SA	HG	AI	132	1.50x5.62	5	3135	14	147	3140	Y	3.00x2.37	5	3.75x1.12	3.75x1.50	abce	Zen	2½	2500	24	46	79		36
45	E	SA	HG	AI	154	1.68x6.25	5	3135	14	147	3140	Y	3.00x2.37	5	3.75x1.12	3.75x1.50	abe	Zen	2½	2700	24	46	79		37
45	E	SA	HG	AI	132	1.50x5.62	5	3135	14	147	3140	Y	3.00x2.37	7	3.75x1.12	3.75x1.50	abe	Zen 2	2	3300	24	46	94		38
45	E	SA	HG	AI	154	1.68x6.25	5	3135	14	147	3140	Y	3.00x2.37	7	3.75x1.12	3.75x1.50	abe	Zen 2	2	3200	24	46	94		39
45	E	SA	HG	AI	132	1.50x5.62	5	3135	14	147	3140	Y	3.00x2.37	9	3.75x1.12	3.75x1.50	abe	Zen 2	2	4000	24	46	111		40
45	E	SA	HG	AI	154	1.68x6.25	5	3135	14	147	3140	Y	3.00x2.37	9	3.75x1.12	3.75x1.50	abe	Zen 2	2	4300	24	46	111		41
45	E	WM	HG	AI	171	2.00x5.87	5	3140	14	173	4140	Y	3.75x2.03	7	4.25x3.25	4.25x3.25	abeg	Zen 3	2	6200	43	66	83		42
45	E	WM	HG	AI	171	2.00x5.87	5	3140	14	173	4140	Y	3.75x2.00	9	4.25x3.25	4.25x3.25	abeg	Zen 4	2	8400	43	66	104		43
30	N		HG	ACI	37¼	.855x3.15	3	DFS	6⅛	31	DFS	Y	2.31x1.44	4	2.69x1.19	2.78x1.63	abcg	Car	1¼	593*	21	29¼	39.14		44
30	N		HG	ACI	37¼	.855x3.15	3	DFS	6⅛	31	DFS	Y	2.31x1.44	4	2.69x1.19	2.78x1.63	abcg	Car	1¼	619*	21	29¼	39.14		45
30	N		HG	ACI	38¼	.865x3.15	3	DFS	6⅛	31	DFS	Y	2.31x1.44	4	2.69x1.19	2.78x1.63	abcg	Car	1¼	582*	21	29¼	39.14		46
30	N		HG	ACI	34½	.865x3.15	3	DFS	6⅛	31	DFS	Y	2.31x1.44	4	2.69x1.19	2.78x1.63	abcg	Car	1¼	568*	21	29¼	39.14		47
30	N		HG	AI	21	.750x2.87	3	3140	6¾	22	1015	N	1.75x1.12	3	1.99x1.62	1.99x1.62	abr	Zen	1¼	456*	24½	23½	31½		48
30	N		HG	Ala	25	.875x2.87	3	1035	7	29	1045	N	1.98x1.12	7	2.49x1.93	2.49x1.37	abr**	Zen	1½	626*	24½	25½	40		49
30	N		HG	Ala	26	.875x2.90	3	1035	7	29	1045	N	1.98x1.12	7	2.50x1.93	2.50x1.37	abcr	Zen	1½	628*	24½	25½	40		50
30	N		HG	Ala	26	.975x2.90	3	1035	7	29	1045	N	1.98x1.12	7	2.52x1.93	2.52x1.37	abcr	Zen	1½	626*	24½	31½	40		51
30	N		HG	Ala	38	1.00x3.50	3	1040	8	40	1045	N	1.98x1.50	7	2.49x2.12	2.49x1.37	abr	Zen	1¾	850*	26	27½	46½		52
30	N		HG	Ala	40	1.00x2.50	3	1040	8	40	1045	N	1.98x1.50	7	2.50x2.12	2.50x1.37	abr	Zen	2	850*	26	25½	46½		53
30	N		HG	Ala	44	1.00x3.50	3	1040	8	40	1045	N	1.98x1.50	7	2.50x2.12	2.50x1.37	abr	Zen	2	850*	26	25½	48½		54
30	N		HG	Ala	44	1.12x3.68	4	3140	8¼	52	1045	Y	2.24x1.50	7	2.62x2.75	2.62x1.75	abhr	Zen	2	1232*	26½	29½	53½		55
45	E	CMT	HG	AI		.859x2.73	4	1335	7.933		1040	Y	2.09x1.24	4	2.50x1.44	2.50x1.87	abce	Zen	1½		22½	24½	43½		56
45	E	CMT	HG	AI		.859x2.73	4	1335	7.871		1040	Y	2.12x1.37	4	2.50x1.59	2.50x1.87	abce	Zen	1		22½	25½	46½		57
45	E	CMT	HG	AI		.859x2.73	4	1335	8.996		1040	Y	2.18x1.37	5	2.70x1.78	2.70x2.09	abce	Zen	1¾		22½	26½	54½		58
45	E	CI	HG	AI	153	1.49x5.37	4	3135	16	244	4140	N	3.00x3.50	3	3.25x3.81	3.25x4.50	abceg	Zen	2	2300	31½	49½	57½	1, 0	59
45	E	CI	HG	AI	153	1.49x5.37	4	3135	16	244	4140	Y	3.00x3.50	4	3.25x3.81	3.25x4.50	abceg	Zen 2	1¼	3200	29½	51⅝	73½	1, 0	60
45	E	CI	HG	AI	153	1.49x5.37	4	3135	16	244	4140	N	3.00x3.16	5	4.00x3.62	4.00x4.50	abceg	Zen 2	2	4500	35½	56½	97½	0	61
45	E	NCI	HG	AI	165	2.00x5.75	5	3135	16	276	4140	N	4.00x5.00	7	4.50x3.75	4.50x5.50	abcdeg	Zen 4	2	11000	51	55	95	00	62
45	E	NCI	HG	AI	176	2.00x5.75	5	3135	16	276	4140	N	4.00x5.00	7	4.50x3.75	4.50x5.50	abcdeg	Zen 4	2	11200	51	55	95	00	63
45	E	NCI	HG	AI	165	2.00x5.75	5	3135	16	276	4140	N	4.00x5.00	5	4.50x3.75	4.50x5.50	abcdeg	Zen 2	2	8200	51	58	72½	00	64
45	E	NCI	HG	AI	176	2.00x5.75	5	3135	16	276	4140	N	4.00x5.00	5	4.50x3.75	4.50x5.50	abcdeg	Zen 2	2	8200	51	58	72½	00	65
h	N			CI		.546x1.90	3	1035	5¾		DFS	N			2.00x	2.00x1.25			⅞	170	18	19	19	5	66
h	N		HG	CI		.703x2.06	3	1030	5¾		DFS	N	1.50x1.18	3	1.75x1.37	1.75x1.78	abcet		1	265	26	22½	28½	5	67
h	N		HG	CI		.703x2.06	3	1030	5¾		DFS	N	1.50x1.18	3	1.75x1.37	1.75x1.78	abcet		1	290	26	22½	28½	5	68
h	N		HG	CI		.703x2.44	3	1030	5¾		DFS	N	1.50x1.18	3	1.75x1.37	1.75x1.78	abcet		1	265	26	22½	28½	5	69
h	N		HG	CI		.703x2.44	3	1030	5¾		DFS	N	1.50x1.18	3	1.75x1.37	1.75x1.78	abcet		1	290	26	22½	28½	5	70
h	N		HG	CI		.703x2.75	3	1030	5¾		DFS	N	1.50x1.18	3	1.75x1.28	1.75x1.65	abcet		1	285	26	22½	28½	5	71
h	N		HG	CI		.703x2.75	3	1030	5¾		DFS	N	1.50x1.18	3	1.75x1.28	1.75x1.65	abcet		1	290	26	22½	28½	5	72
h	N		HG	AI		.859x2.50	4	1030	7		DFS	N	1.93x1.31	3	2.25x1.18	2.25x1.89	abcet		1	370	26	26½	29½	4	73
h	N		HG	AI		.859x2.50	4	1030	7		DFS	N	1.93x1.31	3	2.25x1.18	2.25x1.89	abcet		1¼	395	26	26½	29½	4, 3	74
h	N		HG	AI		1.12x2.56	4	1035	7		DFS	N			2.37x2.53	2.37x1.68			1	475	16½	19½	26½		75
h	N		HG	CI		.859x2.68	4	1030	7		DFS	N	1.93x1.31	3	2.25x1.18	2.25x1.89	abcet		1	370	26	26½	29½	4	76
h	N		HG	CI		.859x2.68	4	1030	7		DFS	N	1.93x1.31	3	2.25x1.18	2.25x1.89	abcet		1¼	395	26	26½	29½	4	77
h	N		HG	AI		1.12x2.75	4	1035	7		DFS	N		3	2.37x1.53	2.37x1.68			1	475	16½	19½	26½	4, 3	78

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AMERICAN GASOLINE

Line Number	ENGINE MAKE AND MODEL	Designed for	Number of Cylinders, Bore and Stroke (In.)	MAXIMUM BRAKE Hp. at Specified R.P.M. With Bare Engine	With Standard Accessories	Piston Displacement (Cu. In.)	Compression Ratio	Maximum Torque at R.P.M. (Lb. Ft.), with or without Accessories	Cylinder Liners - Type	Crankcase - Upper Half Integral with Cylinders	VALVES Arrangement	Exhaust Head Material (S.A.E. No.)	Max. Head Diameter (In.) Intake	Max. Head Diameter (In.) Exhaust	Min. Port Diameter (In.) Intake	Min. Port Diameter (In.) Exhaust	Lift (In.) Intake	Lift (In.) Exhaust	Stem Diameter (In.) Intake	Stem Diameter (In.) Exhaust
1	Continental, Cont. F-162	Ind	4 3 1/16x4 3/8	43 2400		162.4	5.00	124 800	BE	N	In	L	Aus	1.51	1.32	1.37	1.18	.281	.281	.341	.333
2	F-4162	C.T.Tr	4 3 1/16x4 3/8	58 3000		162.4	6.10	122 1600	BE	N	In	L	Aus	1.51	1.32	1.37	1.18	.281	.281	.341	.339
3	H-227	Ind	4 3 5/8x5 1/2	54 2000		227.0	4.70	174 1000	BE	W	In	Oh	XCR	1.64	1.45	1.50	1.31	.343	.343	.437	.439
4	H-243	Ind	4 3 5/8x5 1/2	58 2000		243.0	4.70	186 1000	BE	W	In	Oh	XCR	1.64	1.45	1.50	1.31	.343	.343	.437	.437
5	F-188	Ind	6 3x4 3/8	54 2400		185.6	4.20	140 1000	BE	N	In	L	Aus	1.51	1.32	1.37	1.18	.296	.296	.341	.337
6	F-6188	C.T.Tr	6 3x4 3/8	59 3000		185.6	6.40	139 1000	BE	N	In	L	Aus	1.51	1.32	1.37	1.18	.296	.281	.341	.339
7	F-209	Ind	6 3 1/16x4 3/8	61 2400		209.4	4.70	155 1000	BE	N	In	L	Aus	1.51	1.32	1.37	1.18	.296	.296	.341	.339
8	F-6209	C.T.Tr	6 3 1/16x4 3/8	70 3000		209.4	6.10	153 1200	BE	N	In	L	Aus	1.51	1.32	1.37	1.18	.296	.281	.341	.339
9	F-226	Ind	6 3 1/16x4 3/8	65 2400		226.0	4.90	169 1000	BE	N	In	L	Aus	1.51	1.32	1.37	1.18	.296	.296	.341	.339
10	F-6226	C.T.Tr	6 3 1/16x4 3/8	72 3000		226.0	6.00	168 1000	BE	N	In	L	Aus	1.51	1.32	1.37	1.18	.296	2.81	.341	.339
11	M-271	Ind	6 3 3/8x4 3/8	76 2200		270.9	4.20	198 1200	BE	N	In	L	Aus	1.76	1.51	1.62	1.37	.343	.359	.404	.409
12	M-6271	T.B.Tr	6 3 3/8x4 3/8	89 2800		270.9	6.00	203 1200	BE	N	In	L	Aus	1.76	1.51	1.62	1.37	.343	.359	.404	.402
13	M-290	Ind	6 3 3/8x4 3/8	81 2200		269.9	4.40	212 1200	BE	N	In	L	Aus	1.76	1.51	1.62	1.37	.343	.359	.404	.402
14	M-6290	T.B.Tr	6 3 3/8x4 3/8	93 2800		289.9	6.00	217 1000	BE	N	In	L	Aus	1.76	1.51	1.62	1.37	.343	.359	.404	.402
15	M-330	Ind	6 4x4 3/8	89 2200		329.9	4.80	248 1000	BE	N	In	L	Aus	1.76	1.51	1.62	1.37	.343	.343	.404	.402
16	M-6330	T.B.Tr	6 4x4 3/8	104 2800		329.4	6.10	245 1000	BE	N	In	L	Aus	1.76	1.51	1.62	1.37	.343	.359	.404	.402
17	B-371	Ind	6 4 1/16x4 3/8	97 2200		370.9	5.20	277 1000	BE	N	In	L	Aus	1.89	1.64	1.75	1.50	.359	.359	.435	.432
18	B-6371	T.B	6 4 1/16x4 3/8	100 2600		370.9	6.00	278 1000	BE	N	In	L	Aus	1.89	1.64	1.75	1.50	.359	.359	.435	.432
19	T-6371		6 4 1/16x4 3/8	132 2600		370.9		296 1200	BE	N		Oh	Aus	2.01	1.64	1.75	1.50	.375	.375	.437	.432
20	B-427	Ind	6 4 1/2x4 3/8	112 2200		427.1		322 800	BE	N	In	L	Aus	1.89	1.64	1.75	1.50	.359	.359	.435	.437
21	B-6427	T.B.M	6 4 1/2x4 3/8	127 2600		427.2	5.90	323 1200	BE	N	In	L	Aus	1.89	1.64	1.75	1.50	.359	.359	.435	.432
22	T-6427		6 4 1/2x4 3/8	151 2600		427.2	6.20	340 1200	BE	N		Oh	Aus	2.01	1.64	1.75	1.50	.375	.375	.437	.432
23	U-6501	T.B.Ind	6 4 1/16x5 1/4	170 2400		501.0	5.90	390 2400	BE	N	In	L	Sil	2.14	1.87	2.00	1.63	.374	.374	.435	.432
24	R-513	Ind	6 4 1/16x5 3/8	140 2000		512.9	5.10	393 1000	BE	N	In	Oh	Aus	2.14	1.89	2.00	1.75	.500	.500	.500	.493
25	R-6513	T.B	6 4 1/16x5 3/8	170 2600		512.9	5.90	400 1200	BE	N	In	Oh	Aus	2.14	1.89	1.81	1.75	.500	.500	.500	.495
26	R-572	Ind	6 4 3/8x5 3/8	156 2000		571.7	5.50	440 1000	BE	N	In	Oh	Aus	2.14	1.89	2.00	1.75	.500	.500	.500	.495
27	R-6572	T.B	6 4 3/8x5 3/8	189 2600		571.7	5.90	440 1200	BE	N	In	Oh	Aus	2.09	1.89	2.00	1.75	.500	.500	.500	.495
28	R-602	Ind	6 4 1/2x5 3/8	164 2000		602.0	5.80	460 1000	BE	N	In	Oh	Aus	2.14	1.89	2.00	1.75	.500	.500	.500	.495
29	R-6602	T.B	6 4 1/2x5 3/8	199 2600		602.0	5.80	464 1200	BE	N	In	Oh	Aus	2.14	1.89	2.00	1.75	.500	.500	.500	.495
30	S-749	Ind	6 5 1/4x5 1/2	217 2200		748.8	6.10	572 1000	BE	N		Oh	Aus	2.39	2.14	2.25	2.00	.562	.562	.497	.495
31	S-6749		6 5 1/4x5 1/2	247 2600		748.8	6.10	576 1400	BE	N		Oh	Aus	2.39	2.14	2.25	2.00	.562	.562	.497	.494
32	Dodge T-142, T-144	T	6 3 1/16x4 3/8	95 3600	82 3200	217.8	6.60	172 1200	BE	N	In	L	Sil	1.53	1.41	1.41	1.28	.380	.380	.340	.340
33	T-146	T	6 3 1/16x4 3/8	102 3800	82 3200	230.2	6.70	184 1200	BE	N	In	L	Sil	1.53	1.41	1.41	1.28	.380	.380	.340	.340
34	T-137	T	6 3 1/16x4 3/8	94 3200	74 2800	230.2	6.70	185 1200	BE	N	In	L	Sil	1.53	1.41	1.41	1.28	.380	.380	.340	.340
35	T-148, TX-148, T-152, TX-152	T	6 3 1/16x4 3/8	109 3600	89.5 3200	236.6	6.60	192 1200	BE	N	In	L	Sil	1.72	1.53	1.56	1.37	.380	.380	.340	.340
36	T-150, TX-150, T-154, TX-154	T	6 3 1/16x4 3/8	114 3600	97.5 3200	250.6	6.60	204 1200	BE	N	In	L	Sil ix	1.72	1.53	1.56	1.37	.380	.380	.340	.430
37	T-156	T	6 3 1/16x4 3/4	115 3200	106 3200	281.6	6.40	225 1200	BE	N	In	L	Sil ix	1.94	1.75	1.78	1.59	.410	.380	.370	.430
38	T-158, TX-158	T	6 3 1/2x5	126 3000	111 2800	331.3	6.50	270 1200	BE	N	In	L	Sil ix	1.94	1.75	1.78	1.59	.410	.380	.370	.430
39	Fageol Marine FM-200	M	6 4 1/4x4 3/4		200 3200	404.0	8.50	400 2200	EA	D	In	I	Sil	1.77	1.68	1.62	1.50	.375	.375	.373	.373
40	Ford 8MB	B	6 3 1/16x4.4	110 3400	100 3150	254.0	6.85	212 1200	BE	N	In	L	Sil	1.65	1.51	1.51	1.34	.340	.292	.341	.341
41	7HT	T	6 3.3x4.4	95 3300	87 3100	226.0	6.8	180 1200	BE	N	In	L	Sil	1.65	1.51	1.51	1.34	.340	.292	.341	.341
42	8RT	T	8 3 1/16x3 3/4	100 3600	90 3500	239.0	6.8	180 2000	BE	N	In	L	Sil	1.51	1.51	1.34	1.34	.307	.307	.341	.341
43	8EQ	T	8 3 1/16x4 3/8	145 3600	127 3300	337.0	6.4	255 1800	BE	N	In	L	Sil	1.80	1.51	1.35	1.35	.360	.380	.342	.340
44	8NNN-120	M.I	4 3 1/16x3 3/4	37 2400	35 2400	119.7	6.2	85 1700	BE	D	In	L	CNS	1.51	1.28	1.48	1.24	.307	.307	.310	.310
45	7HNN-226	M.I	6 3.3x4.4	80 2400	77 2400	226.0	6.8	183 1500	BE	N	In	L	CNS	1.65	1.51	1.46	1.34	.335	.335	.341	.341
46	8MNN-254	M.I	6 3.5x4.4	95 2400	92 2400	254.0	6.8	216 1600	BE	N	In	L	CNS	1.65	1.51	1.46	1.34	.335	.335	.341	.341
47	8RNN-239	M.I	8 3 1/16x3 3/4	94 2800	92 2800	239.0	6.8	189 1900	BE	N	In	L	CNS	1.51	1.51	1.34	1.34	.292	.292	.341	.341
48	8ENN-337	M.I	8 3 1/16x4 3/8	117 2400	112 2400	337.0	6.4	259 2000	BE	N	In	L	HFA	1.80	1.51	1.57	1.35	.357	.340	.341	.341
49	Franklin 4CHO-150	T.Tr.Ind	4 3 5/16x3 5/8	50-3000	43 3000	150.0	6.00	100 1200	BE	D	Se	I		1.66	1.51	1.50	1.40	.375	.375	.375	.375
50	G. M. C. 228	T	6 3 1/16x3 1/2	95 3200	85 3000	228.0	6.75	183 1000	BE	N	In	I	CNS	1.64	1.43	1.31	1.16	.323	.331	.341	.340
51	248	T	6 3 1/16x4	100 3100	89 3000	248.5	6.75	202 1000	BE	N	In	I	CNS	1.64	1.43	1.31	1.16	.323	.331	.341	.340
52	270	T	6 3 1/16x4	104 3000	95 3000	269.0	6.75	222 1000	BE	N	In	I	CNS	1.64	1.43	1.31	1.16	.323	.331	.341	.340
53	308	T	6 3 1/16x4	122 3200	100 2800	308.2	6.00	241 1000	BE	N	Se	I	CNS	1.81	1.56	1.41	1.37	.390	.390	.372	.371
54	361	T	6 4 1/16x4 1/2	136 3000	115 2800	360.8	6.00	273 1000	BE	N	Se	I	CNS	1.94	1.72	1.50	1.50	.406	.406	.372	.371
55	426	T	6 4 1/16x5	145 2600	127 2400	425.6	6.00	345 1000	BE	N	Se	I	CNS	1.94	1.72	1.50	1.50	.406	.406	.372	.371
56	477	T.B	6 4 1/16x5	154 2600	135 2600	477.1	6.00	385 1000	BE	N	Se	I	CNS	1.94	1.72	1.50	1.50	.406	.406	.372	.371
57	Gray Marine Light Four-69	M	4 2 1/16x3		16 1800	69		476 1400	EA	N	In	L	Sil	1.20	1.02	1.06	.875	.284	.284	.314	.313
58	Sea Scout-91	M	4 2 1/16x3		25 2000	91	7.45			N	In	L	Sil	1.20	1.02	1.06	.875	.284	.284	.314	.313
59	Lugger 4-162	M	4 3 1/16x4 3/8		42 1800	162	6.00			N	In	L	Sil	1.51	1.33	1.37	1.18	.331	.331	.341	.361
60	Lugger 6-226	M	6 3 1/16x4 3/8		73 2400	226	6.75			N	In	L	Sil	1.51	1.33	1.37	1.18	.284	.284	.341	.340
61	Lugger 6-244	M	6 3 1/16x4 3/8		83 2400	244	6.22			N	In	L	Sil	1.70	1.42	1.56	1.31	.311	.311	.340	.338
62	Lugger 6-330	M	6 4x4 3/8		96 2400	330	6.00			N	In	L	Sil	1.76	1.51	1.62	1.37	.339	.339	.404	.402
63	Express 4-162	M	4 3 1/16x4 3/8		63 3000	162	6.00			N	In	L	Sil	1.51	1.33	1.37	1.18	.331	.331	.341	.330
64	Express 6-226	M	6 3 1/16x4 3/8		93 3200	226	6.75			N	In	L	Sil	1.51	1.33	1.37	1.18	.311	.311	.341	.342
65	Express 6-244	M	6 3 1/16x4 3/8		102 3200	244	6.9			N	In	L	Sil	1.70	1.42	1.56	1.31	.357	.357	.340	.332
66	Express 6-330	M	6 4x4 3/8		124 3200	330	6.5			N	In	L	Sil	1.76	1.51	1.62	1.37	.354	.354	.404	.401
67	Express 6-427	M	6 4 1/2x4 3/8		150 3200	427	6.73			N	In	L	Sil	1.89	1.64	1.75	1.5	.359	.359	.435	.438
68	Super 6-330	M	6 4x4 3/8		145 3200	330	6.5			N	In	L	Sil	1.76	1.51	1.62	1.37	.354	.354	.404	.402
69	Super 6-427	M	6 4 1/2x4 3/8		175 3200	427	7.50			N	In	L	Sil	2.16	1.77	2.02	1.63	.359	.359	.435	.432
70	Phantom 4-45	M	4 2 1/16x3		45 3600	91	7.45			N	In	L	Sil	1.20	1.02	1.06	.875	.284	.284	.314	.314
71	Phantom 4-75	M	4 3 1/16x4 3/8		75 3600	162	7.00			N	In	L	Sil	1.64	1.45	1.37	1.18	.331	.331	.341	.313
72	Phantom 6-112	M	6 3 1/16x4 3/8		112 3600	226	6.75			N	In	L	Sil	1.51	1.33	1.37	1.18	.311	.311	.341	.339
73	Phantom 6-122	M	6 3 1/16x4 3/8		125 3600	244	7.70			N	In	L	Sil	1.70	1.42	1.56	1.31	.311	.311	.340	.343
74	Fireball 4-50	M	4 2 1/16x3		50 4000	91	7.45			N	In	L	Sil	1.20	1.02	1.06	.875	.284	.284	.314	.333
75	Fireball 4-90	M	4 3 1/16x4 3/8		90 4000	162	8.00			N	In	L	Sil	1.64	1.45	1.16	1.07	.331	.331	.341	.318
76	Fireball 6-140	M	6 3 1/16x4 3/8		140 4000	244	8.45			N	In	L	Sil	1.70	1.58	1.43	1.31	.360	.360	.340	.339
77	Fireball 6-160	M	6 3 1/16x4 3/8		160 4000	244	9.1			N	In	L	Sil	1.70	1.58	1.43	1.31	.360	.360	.340	.371
78	Racing 91	M	4 2 1/16x3		65 4600	91	7.45			N	In	L	Sil	1.33	1.23	1.16	1.07	.284	.284	.314	.313
79	Racing 244	M	6 3 1/16x4 3/8		190 5000	244	10.1			N	In	L	Sil	1.70	1.58	1.56	1.43	.360	.360	.340	.371
80	Hall-Scott (H) 120	T.B.FA	6 4 1/16x5	122 2800	107 2800	425.6	4.96	288 1000	BE	W	In	I	2112	2.28	2.16	2.12	1.90	.421	.421	.435	.434
81	(H) 135	T.B.FA	6 4 1/16x5	140 2800	122 2800	477.1	5.50	340 1000	BE	W	In	I	2112	2.28	2.16	2.12	1.90	.421	.421	.435	.434
82	(H) 477	T.B	6 4 1/16x5	157 2600	136 2600	477.1	6.50	380 1600	BE	W	In	I	2112	2.15	2.02	2.00	1.75	.506	.506	.435	.434
83	(H) 180-1, 180-3	B	6 5x6	208 2200	193 2200	707.0	6.00	540 1500	BE	W	In	I	2112	2.63	2.38	2.38	2.02	.482	.482	.497	.528
84	(H) 190-2	B	6 5 1/4x6	220 2200	200 2200	779.0	5.60	625 1300	BE	W	In	I	2112	2.63	2.38	2.38	2.02	.482	.482	.497	.528
85	(H) 190-1, 190-3	B	6 5 1/4x6	235 2200	215 2200	779.0	6.00	640 1400	BE	W	In	I	2112	2.63	2.38	2.38	2.02	.482	.482	.497	.528
86	470	Tr.In	6 5 1/2x6	245 2100		855.3	5.20	660 1600	BE	N	Se	I	2112	2.62	2.37	2.37	2.02	.547	.547	.497	.528
87	480	Tr.In	6 5 1/2x6	286 2100		934.8	5.70	760 1400	BE	N	Se	I	2112	2.62	2.37	2.37	2.02	.547	.547	.497	.528

For abbreviations see pages 158 and 159

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ENGINES—*Continued*

VALVES				PISTONS				CONNECTING RODS			CRANKSHAFT								CARBURETOR			OVERALL DIMENSIONS (In.)				
	Seats												Crank-Pin	MAIN BEARINGS												
														Diameter and Length (In.)												
Angle (Deg.)	Inserts Used?	Insert Material (S.A.E. No.)	Camshaft Drive—Type	Material	Weight with Pins, Rings, Bushings (Oz.)	Piston Pin Diameter and Length (In.)	Number of Rings per Piston	Material	Center to Center Length (In.)	Weight with Bushing and Cap (Oz.)	Material	Counter Balance Used	Diameter and Length (In.)	Number	Front	Rear	Oil Pressure to—	Make	Size	Engine Weight without Carburetor or Ignition (Lb.)	Width	Height	Length	Clutch Housing (S.A.E. Nos.)	Line Number
(h)	N		HG	CI		.859x2.87	4	1030	7		DFS	N	1.93x1.31	3	2.25x1.18	2.25x1.89	abcet		1	370	26	26½	29¼	8	1
(h)	N		HG	CI		.859x2.87	4	1030	7		DFS	N	1.93x1.31	3	2.25x1.18	2.25x1.89	abcet		1¼	395	26	26½	29¼	4, 3	2
(h)	E	SA		Ala		1.25x3.31	5	1035	9½		DFS	N	2.50x1.18	3	2.87x1.81	2.87x2.06	abce		1¼	645	19¾	33½	30½		3
(h)	E	SA				1.25x3.18	5	1035	9½		DFS	N	2.50x1.18	3	2.87x1.81	2.87x2.06	abce		1¼	654	19¾	33½	30½		4
(h)	N		HG	CI		.859x2.50	4	1030	7		DFS	N	1.93x1.31	4	2.25x1.18	2.25x1.81	abcet		1¼	505	26	27¼	36½	4	5
(h)	N		HG	CI		.859x2.50	4	1030	7		DFS	Y	1.93x1.31	4	2.25x1.18	2.25x1.81	abcet		1¼	515	26	27¼	36½	4, 3	6
(h)	N		HG	CI		.859x2.62	4	1030	7		DFS	N	1.93x1.31	4	2.25x1.18	2.25x1.81	abcet		1¼	505	26	27¼	36½	4	7
(h)	N		HG	CI		.859x2.62	4	1030	7		DFS	Y	1.93x1.31	4	2.25x1.18	2.25x1.81	abcet		1¼	515	26	27¼	36½	4, 3	8
(h)	N		HG	CI		.859x2.62	4	1030	7		DFS	Y	2.06x1.31	4	2.37x1.28	2.37x1.73	abcet		1¼	510	26	27¼	36½	4	9
(h)	N		HG	CI		.859x2.62	4	1030	7		DFS	Y	2.06x1.31	4	2.37x1.28	2.37x1.81	abcet		1¼	515	26	27¼	36½	4, 3	10
(h)	E		HG	CI		1.10x3.06	4	1035	8⅝		DFS	Y	2.25x1.56	7	2.62x1.50	2.62x2.18	abcet		1¼	720	25⅜	29½	42	3	11
(h)	E	SA	HG	CI		1.10x3.06	6	1035	8⅝		DFS	Y	2.25x1.56	7	2.62x1.50	2.62x2.18	abcet		1¼	755	25⅜	29½	42	4, 3	12
(h)	E		HG	CI		1.10x3.18	4	1035	8⅝		DFS	Y	2.25x1.56	7	2.62x1.50	2.62x2.18	abcet		1¼	720	25⅜	29½	42	3	13
(h)	E	SA	HG	CI		1.10x3.18	6	1035	8⅝		DFS	Y	2.25x1.56	7	2.62x1.50	2.62x2.18	abcet		1¼	755	25⅜	29½	42	4, 3	14
(h)	E		HG	CI		1.10x3.43	4	1035	8⅝		DFS	Y	2.25x1.56	7	2.62x1.50	2.62x2.18	abcet		1¼	720	25⅜	29½	42	3	15
(h)	E	SA	HG	CI		1.10x3.43	6	1035	8⅝		DFS	Y	2.25x1.56	7	2.62x1.50	2.62x2.18	abcet		1¼	755	25⅜	29½	42	4, 3	16
(h)	E		HG	Ala		1.25x3.43	5	1035	8⅝		DFS	Y	2.50x1.69	7	2.87x1.65	2.87x2.62	abcet		1¼	870	26	29¼	43½	2	17
(h)	E	SA	HG	Ala		1.25x3.43	7	1035	8⅝		DFS	Y	2.50x1.69	7	2.87x1.65	2.87x2.71	abcet		2	870	26	29¼	43½	3, 2	18
(h)	N					1.25x3.37	5	1035	8⅝		DFS	Y		7	2.87x1.65	2.87x2.71	abce		1¾	1070	24½	31⅝	45½		19
(h)	E		HG	Ala		1.25x3.43	5	1035	8⅝		DFS	Y	2.50x1.69	7	2.87x1.65	2.87x2.62	abcegt		1¼	875	26	29¼	43½	2	20
(h)	E	SA	HG	Ala		1.25x3.43	7	1035	8⅝		DFS	Y	2.50x1.69	7	2.87x1.65	2.87x2.71	abcegt		2	875	26	29¼	43½	3, 2	21
(h)	N			Ala		1.25x3.62	5	1035	8⅝		DFS	Y		7	2.87x1.65	2.87x2.71	abce		1¾	1075	24½	31⅝	45½		22
(z)	E	SA	HG	Al		1.50x3.72	5	1035	10½		DFS			7	2.75x1.75	2.75x2.81	abeg				28½	37½	47½	2	23
(h)	E		HG	Ala		1.50x3.72	5	1035	10½		DFS	Y	3.00x1.94	7	3.25x1.75	3.25x2.75	abcegt		2	1550				1	24
(h)	E	SA	HG	Al		1.50x3.72	5	1035	10½		DFS	Y	3.00x1.94	7	3.25x1.75	3.25x2.75	abcefg		2	1525				2	25
(h)	E		HG	Ala		1.50x3.72	5	1035	10½		DFS	Y	3.00x1.94	7	3.25x1.75	3.25x2.75	abcegt		2	1550				1	26
(h)	E	SA	HG			1.50x3.72	5	1035	10½		DFS	Y	3.00x1.94	7	3.25x1.75	3.25x2.75	abceg		2	1525				2	27
(h)	E	SA	HG	Ala		1.50x3.72	5	1035	10½		DFS	Y	3.00x1.94	7	3.25x1.75	3.25x2.75	abceg		2	1550				1	28
(h)	E	SA	HG	Al		1.50x3.72	5	1035	10½		DFS	Y	3.00x1.94	7	3.25x1.75	3.25x2.75	abcegt		2	1525				2	29
(h)	E	SA		Alt		1.75x4.53	5	8640	10½		DFS	Y		7	3.75x1.12	3.75x3.62	abce		2½		31½	47⅛	57⅛	0	30
(h)	E	SA		Alt		1.75x4.53	5	8640	10½		DFS	Y		7	3.75x1.87	3.75x3.12	abce		2½	1865	31½	47⅛	57⅛	1	31
45	E	SA	Ch	Al		.86x2.75	4	MS	7½		CS	Y	2.06x1.00	4	2.50x1.17	2.50x1.59	abce	Car	1½	500	23¾	35⅛	35¼		32
45	E	SA	Ch	Al		.86x2.75	4	MS	7½		CS	Y	2.06x1.00	4	2.50x1.17	2.50x1.59	abce	Str	1½	525	23¾	35⅛	35¼		33
45	E	SA	Ch	Al		.86x2.75	4	MS	7½		CS	Y	2.06x1.00	4	2.50x1.17	2.50x1.59	abce	Car	1½	570	24½	37⅛	37⅝		34
45	E	SA	Ch	Al		.86x2.87	4	MS	8		CS	Y	2.12x1.09	4	2.50x1.17	2.50x1.59	abce	Car	1½	575	23¾	35⅛	39		35
45	E	SA	Ch	Al		.86x2.87	4	MS	7½		CS	Y	2.12x1.09	4	2.50x1.17	2.50x1.59	abce	Car	1½	590	23¾	35⅛	39		36
45	Bo	Sil	HG	Al		1.12x3.25	4	MS	9½		CS	Y	2.31x1.34	7	3.00x1.71	3.00x2.93	abce	Car	1½	890	28⅞	38⅛	48		37
45	Bo	Sil	HG	Al		1.12x3.25	4	MS	8⅝		CS	Y	2.31x1.34	7	3.00x1.71	3.00x2.93	abce	Car	1½	898	28⅞	38⅛	48		38
45	N		Ch	Al	52½	1.25x3.62	4	4340	8⅝	68	1050	Y	2.49x1.68	7	2.62x1.81	2.62x1.81	abc	Zen	2½	965	42¼	29¼	66⅝	4	39
45	E	CMT	HG	Al	26	.864x3.12	3	DFS	7.8	29	CAS	Y	2.30x1.4	4	2.87x1.14	2.87x1.58	abce	Hol	1½	649					40
45	E	CMT	HG	Al	21	.850x	4	DFS	8.3	29	CAS	Y	2.30x1.4	4	2.87x1.14	2.87x1.58	abce	Hol	1⅝	576	24⅛	37⅝	37⅝		41
45	Y	CMT	HG	Al	19	.750x	4	DFS	7.0	19	CAS	Y	2.14x1.75	3	2.50x1.15	2.50x2.25	abce	Hol	1	508	23	36⅛	32⅞		42
45	E	CMT	HG	Al	26	.864x3.12	4	DFS	8.1	26	DFS	Y	2.40x2.25	3	2.87x1.50	2.40x2.87	abce	Hol	1¼	884					43
45	Bo	CM	HG	Ste	16	.750x2.88	3	CMS	7	20.6	CAS		2.09x1.12	7	2.25x1.60	2.25x1.60	abce	MaS	⅝	340	20.6	26.2	29.4	5	44
45	E	CM	HG	Alst	17	.850x2.92	4	CMS	8⅛	29	CAS		2.30x1.20	4	2.87x1.14	2.87x1.37	abce	Hol	1¼	555	21	30.2	37.8	3, 4	45
45	E	CM	HG	Alst	20	.850x2.92	4	CMS	8⅛	29	CAS		2.30x1.20	4	2.87x1.14	2.87x1.37	abce	Hol	1¼	565	21	30.2	37.8	3, 4	46
45	Bo	CM	HG	Alst	13½	.750x2.85	4	CMS	7	19	CAS		2.14x1.75	3	2.50x1.50	2.50x1.97	abce	Hol	1	570	22.9	30.6	32.8	3, 4	47
45	E	CM	HG	Alst	20	.850x3.12	4	CMS	8⅛	27	DFS		2.40x2.25	3	2.86x1.35	2.86x2.20	abcet	Hol	1¼	860	27.7	39.1	40.7	3	48
30	Y	Nir	HG	Al	18	.859x3.12	4	1040	7	74	1045	Y	1.93x1.00	3	2.25x1.22	2.25x1.50	ab	Op	1¼		34	18½	18	4	49
30	N		HG	Al	36	.990x3.08	4	1141	7	35	5046	Y	2.31x1.44	4	2.69x1.44	2.78x1.73	abcdeg	Zen	1½		21	26⅛	40¾		50
30	E	WR	HG	Al	38	.990x3.25	4	1141	7	35	5046	Y	2.31x1.44	4	2.69x1.44	2.78x1.73	abcdeg	Zen	1½		21	26⅛	40¾		51
30	E	WR	HG	Al	40	.990x3.25	4	1141	7	35	5046	Y	2.31x1.44	4	2.69x1.44	2.78x1.73	abcdeg	Zen	1½		21	26⅛	40¾		52
45	E	WR	HG	Al	40	1.00x3.36	4	1340	9¾	47	5046	Y	2.37x1.62	7	2.75x2.28	2.75x2.37	abcdeg	Zen	1½		25¼	31⅛	45½	3	53
(h)	E	St	HG	Al	58	1.25x3.59	4	1340	10¾	69	5046	Y	2.62x1.75	7	3.00x2.37	3.00x2.50	abcdeg	Zen	1¾		22½	35⅛	47½	3	54
(h)	E	St	HG	Al	60	1.25x3.71	4	1340	10¾	69	5046	Y	2.62x1.75	7	3.00x2.37	3.00x2.50	abcdeg	Zen	1¾		22½	35⅛	47½	3	55
(h)	E	St	HG	Al	64	1.25x3.96	4	1340	10¾	69	5046	Y	2.62x1.75	7	3.00x2.37	3.00x2.50	abcdeg	Zen	1¾		22½	35⅛	47½	3	56
(h)	N		HG	CI			3		5⅜		1045	N	1.43x1.06	3	1.75x8.75	1.75x1.32	abc	Zen	1	330	17¾	19⅛	29¼		57
(h)	N		HG	Al		.703x2.43	3	CS	5⅜		1045	N	1.5x1.18	3	1.75x1.78	1.75x1.37	aber	Zen	1	390	17¾	19⅛	29¼		58
(h)	N		HG	Al		.859x2.69	4	CS	7		1045	N	1.93x1.31	3	2.25x1.89	2.25x1.18	aber	Zen	1¼	565	19½	22⅛	35½		59
(k)	N		HG	CI		.859x2.81	4	CS	7		1045	Y	2.06x1.31	4	2.25x1.73	2.25x1.28	aber	Zen	1½	695	19¾	22⅛	42⅛		60
45	N		HG	Al		.859x2.87	4	CS	8⅛		1045	Y	2.12x1.37	4	2.37x2.06	2.37x1.43	aber	Zen	1½	825	23⅛	23⅜	43⅝		61
(k)	N		HG	Al		1.10x3.43	5	CS	8⅝		1045	Y	2.25x1.56	7	2.62x2.15	2.62x1.56	aber	Str	1¾	1070	24⅝	25⅛	49¼		62
(h)	N		HG	Al		.859x2.68	4	CS	7		1045	N	1.93x1.31	3	2.25x1.89	2.25x1.18	aber	Zen	1¼	565	19½	22⅛	35½		63
(k)	N		HG	Al		.859x2.81	4	CS	7		1045	Y	2.06x1.31	4	2.25x1.73	2.25x1.28	aber	Zen	1½	695	19¾	22⅛	42⅛		64
45	N		HG	Al		.859x2.87	4	CS	8⅛		1045	Y	2.12x1.37	4	2.37x2.06	2.37x1.43	aber	Zen	1½	825	21⅛	23⅜	43⅝		65
(k)	N		HG	Al		1.10x3.43	5	CS	8⅝		1045	Y	2.25x1.56	7	2.62x2.15	2.62x1.56	aber	Str	2	1070	24⅝	25⅛	49¼		66
(k)			HG	Al		1.25x3.63	5	CS	8⅝		1045	Y	2.5x1.68	7	2.87x2.71	2.87x1.65	aber	Str	2	1250	25⅛	25⅛	53⅛		67
(k)	N		HG	Al		1.10x3.43	5	CS	8⅝		1045	Y	2.25x1.56	7	2.62x2.15	2.62x1.56	aber	Str	1¾	1025	24⅝	25⅛	48¼		68
(k)	N		HG	Al		1.25x3.63	5	CS	8⅝		1045	Y	2.5x1.68	7	2.87x2.71	2.87x1.65	aber	Str	2	1200	25⅛	25⅛	53⅛		69
(h)	N		HG	Al		.703x2.43	3	CS	5⅜		1045	N	1.5x1.18	3	1.75x1.78	1.75x1.37	aber	Zen	1¼	385	17¾	19⅛	29¼		70
(h)	N		HG	Al		.859x2.68	4	CS	7		1045	N	1.93x1.31	3	2.25x1.89	2.25x1.18	aber	Zen	1¾	500	23⅛	22⅛	33		71
(k)	N		HG	Al		.859x2.81	4	CS	7		1045	Y	2.06x1.31	4	2.25x1.73	2.25x1.28	aber	Zen	1¾	650	21⅛	23⅛	39⅞		72
45	N		HG	Al		.859x2.87	4	CS	8⅝		1045	Y	2.12x1.37	4	2.37x2.06	2.37x1.43	aber	Zen	1½	790	25⅛	23⅛	42⅛		73
(h)	N		HG	Al		.703x2.43	3	CS	5⅜		1045	N	1.5x1.18	3	1.75x1.78	1.75x1.37	aber	Zen	1¼	365	17¾	19⅛	29¼		74
(h)	N		HG	Al		.859x2.68	4	CS	7		1045	N	1.93x1.31	3	2.25x1.89	2.25x1.18	aber	Zen	1¼	500	21⅛	22⅛	33		75
45	N		HG	Al		.859x2.87	4	CS	8⅝		1045	Y	2.12x1.37	4	2.37x2.06	2.37x1.43	aber	Zen	1½	790	25⅛	23⅛	42⅛		76
45	N		HG	Al		.859x2.87	4	CS	8⅝		1045	Y	2.12x1.37	4	2.37x2.06	2.37x1.43	aber	Zen	1½	790	27⅛	23⅛	42⅛		77
(h)	N		HG	Al		.703x2.43	3	CS	5⅜		1045	N	1.5x1.18	3	1.75x1.78	1.75x1.37	aber	Zen	1¼		17¾	19⅛	29¼		78
(h)	N		HG	Al		.874x2.92	4	CS	8⅝		1045	Y	2.12x1.37	4	2.37x2.06	2.37x1.43	aber	Zen	1½		29⅝	27⅛	37½		79
30	E	CA	Ch	Al	52	1.12x3.74	4	AS	11	104	4140	Y	2.62x2.00	7	3.00x1.50	3.00x2.25	abcefg	Zen	1¾	1252*	54⅛	18⅛	52⅛	2, 3	80
30	E	CA	Ch	Al	56	1.12x3.98	4	AS	11	104	4140	Y	2.62x2.00	7	3.00x1.50	3.00x2.25	abcefg	Zen	1¾	1265*	54⅛	18⅛	52⅛	2, 3	81
(h)	E	4140	Ch	Al	53	1.12x3.98	4	3135	11	91	4140	Y	2.62x2.00	8	3.00x1.46	3.00x2.28	abcde	Zen	1¾	1293	56⅛	20⅛	53¼	2	82
(h)	E	4140	Ch	Al	96	1.37x4.20	4	3135	11	104	4140	Y	2.75x2.44	7	3.25x2.19	3.25x2.50	abcef	Zen	2	1786	54⅛	22	71¼	1, 2	83
(h)	E	4140	Ch	Al	101	1.37x4.44	6	3135	11	104	4140	Y	2.75x2.44	8	3.25x2.19	3.25x2.50	abcef	Zen	2	1786	54⅛	22	71¼	1, 2	84
(h)	E	4140	Ch	Al	101	1.37x4.44	6	3135	11	104	4140	Y	2.75x2.44	7	3.25x2.19	3.25x2.50	abcef	Zen	2	1970	56⅛	22	71⅝	1, 2	85
(h)	E	4140	Ch	Al	116	1.37x4.68	5	3140	12	157	4140	Y	3.00x2.43	7	3.25x2.09	3.25x3.12	abcdf	Zen	2½	2116	28	44⅝	60⅛	1, 2, 0	86
(h)	E	4140	Ch	Al	132	1.37x4.93	5	3140	12	157	4140	Y	3.00x2.43	7	3.25x2.09	3.25x3.12	abcdf	Zen	2½	2136	28	44⅝	60⅛	1, 2, 0	87

For abbreviations see pages 158 and 159

For page on which Directory of Manufacturers appears, see Table of Contents page 65

AMERICAN GASOLINE

Line Number	ENGINE MAKE AND MODEL	Designed for	Number of Cylinders, Bore and Stroke (In.)	MAXIMUM BRAKE Hp. at Specified R.P.M. With Bare Engine	With Standard Accessories	Piston Displacement (Cu. In.)	Compression Ratio	Maximum Torque at R.P.M. (Lb. Ft.) with or without Accessories	Cylinder Liners - Type	Crankcase - Upper Half Integral with Cylinder	VALVES Arrangement	Exhaust Head Material (S.A.E. No.)	Max. Head Diameter (In.) Intake	Max. Head Diameter (In.) Exhaust	Min. Port Diameter (In.) Intake	Min. Port Diameter (In.) Exhaust	Lift (In.) Intake	Lift (In.) Exhaust	Stem Diameter (In.) Intake	Stem Diameter (In.) Exhaust
1	Hall-Scott, Cont. 400	T	6 5¼x7	286 1800	260 1800	1090.0	5.70	865 1200 BE	N	Se	I	2112	2.87	2.75	2.62	2.50	.482	.482	.497	.528
2	Invader 186-87	M	6 5¼x7		252 2100	997.8	5.08		N	In	I	2112	2.87	2.87	2.62	2.62	.482	.482	.497	.528
3	Invader 168-69	M	6 5¼x7		275 2100	997.8	5.00		N	In	I	2112	2.87	2.87	2.62	2.62	.482	.482	.497	.528
4	Defender 2286-87	M	12 5¾x7		605 2100	2181.0	7.00		N	Se	I	2112	2.87	2.75	2.62	2.50	.482	.472	.497	.528
5	Defender 2368-69	M	12 5¾x7		630 2100	2181.0	7.00		N	Se	I	2112	2.87	2.75	2.62	2.50	.482	.482	.497	.528
6	Defender 13368-69	M	12 5¾x7		900 2100	2181.0	6.00		N	Se	I	2112	2.87	2.75	2.62	2.50	.482	.482	.497	.528
7	Hercules BXB	M,Tr,Ind	2 2⅞x3	19 2300	8.5 2300	38.0	6.00	28 1200 BE	N	In	L	Aus	1.30	1.05	1.12	.875	.200	.200	.248	.248
8	NXA	M,Tr,Ind	2 3x4	13 2000	11 2000	56.5	5.50	39 1100 BE	N	In	L	Aus	1.48	1.35	1.25	1.12	.250	.250	.310	.310
9	NXB	M,Tr,Ind	2 3⅛x4	18 2000	13 2000	68.3	5.50	46 1100 BE	N	In	L	Aus	1.48	1.35	1.25	1.12	.250	.250	.310	.310
10	ZXA	M,Tr,Ind	4 2½x3	23 3800	19 3800	58.8	6.10	37 1800 BE	N	In	L	Aus	1.30	1.05	1.12	.875	.200	.200	.248	.248
11	ZXB	M,Tr,M,Ind	4 2⅝x3	29 3800	21 3800	64.9	6.10	39 1800 BE	N	In	L	Aus	1.30	1.05	1.12	.875	.200	.200	.248	.248
12	IXA	T,Tr,M,Ind	4 3x4	40 3200	34 3200	113.0	5.50	79 2000 BE	N	In	L	Aus	1.48	1.35	1.25	1.12	.250	.250	.310	.310
13	IXB	T,Tr,M,Ind	4 3 x4	47 3200	40 3200	133.0	5.50	92 1800 BE	N	In	L	Aus	1.48	1.35	1.25	1.12	.250	.250	.310	.310
14	QXA	T,B,Tr,M,Ind	6 3⅛x4½	64 3200	54.5 3200	190.0	6.50	132 1300 BE	N	In	L	Aus	1.48	1.39	1.31	1.12	.311	.311	.310	.310
15	QXB	T,B,Tr,M,Ind	6 3⅛x4½	69 3200	59 3200	205.0	6.50	142 1400 BE	N	In	L	Aus	1.48	1.39	1.31	1.12	.311	.311	.310	.310
16	QXC	T,B,Tr,M,Ind	6 3⅛x4½	77.5 3200	66 3200	221.0	6.50	159 4000 BE	N	In	L	Aus	1.48	1.39	1.50	1.25	.311	.311	.310	.310
17	QXLD	T,B,Tr,M,Ind	6 3⅛x4½	91 3200	77 3200	236.7	6.50	189 1400 BE	N	In	L	Aus	1.61	1.39	1.50	1.25	.311	.311	.310	.310
18	JXE	T,B,Tr,M,Ind	6 3⅝x4½	91 3200	77 3200	236.0	6.50	184 1400 BE	N	In	L	Aus	1.68	1.56	1.50	1.37	.356	.356	.373	.373
19	JXB	T,B,Tr,M,Ind	6 3⅝x4½	98 3200	83 3200	263.0	6.50	190 1400 BE	N	In	L	Aus	1.68	1.56	1.50	1.37	.356	.356	.373	.373
20	JXC	T,B,Tr,M,Ind	6 3⅝x4½	103 3200	87.5 3200	282.0	6.50	207 1400 BE	N	In	L	Aus	1.68	1.56	1.50	1.37	.356	.356	.373	.373
21	JXD	T,B,Tr,M,Ind	6 4x4½	113 3000	96 3000	320.0	6.50	240 1200 BE	N	In	L	Aus	1.68	1.56	1.50	1.37	.359	.359	.373	.373
22	JXLD	T,B,Tr,M,Ind	6 4x4½	131 3200	111 3200	339.0	6.90	272 1400 BE	N	In	L	Aus	1.83	1.67	1.72	1.50	.356	.356	.373	.373
23	WXC-3	T,B,Tr,M,Ind	6 4⅛x4½	131 2600	111 2600	383.0	6.60	298 1400 BE	N	In	L	Aus	1.87	1.75	1.62	1.56	.388	.388	.373	.373
24	WXLC	T,B,Tr,M,Ind	6 4⅛x4½	123 2600	104 2600	358.0	6.60	275 1200 BE	N	In	L	Aus	1.87	1.75	1.68	1.62	.388	.388	.373	.373
25	WXLC-3	T,B,Tr,M,Ind	6 4⅛x4½	139 2600	118 2600	404.0	6.60	312 1300 BE	N	In	L	Aus	1.87	1.75	1.68	1.62	.388	.388	.373	.373
26	TDXB	T,B,Tr,M,Ind	6 4½x5¼	160 2600	136 2600	474.0	6.50	366 1400 BE	N	In	L	2112	2.06	2.00	1.87	1.75	.388	.388	.373	.437
27	RXB	T,B,Tr,M,Ind	6 4⅛x5½	137 2400	116 2400	501.0	6.50	350 1200 BE	N	In	L	Aus	2.00	2.00	1.75	1.75	.388	.388	.373	.373
28	RXC	T,B,Tr,M,Ind	6 4⅛x5½	143 2400	121 2400	529.2	6.50	372 1200 BE	N	In	L	Aus	2.00	2.00	1.75	1.75	.388	.388	.373	.373
29	RXLC	T,B,Tr,M,Ind	6 4⅛x5½	146 2400	124 2400	529.2	6.20	408 1100 BE	N	In	L	Aus	2.00	2.00	1.81	1.75	.388	.388	.373	.373
30	RXLD	T,B,Tr,M,Ind	6 4⅛x5½	154 2400	131 2400	556.0	6.50	430 1100 BE	N	In	L	Aus	2.00	2.00	1.81	1.75	.388	.388	.373	.373
31	RXLDH	T,B,Tr,M,Ind	6 4⅛x5½	180 2600	153 2600	556.0	6.50	443 1400 BE	N	In	L	2112	2.06	2.00	1.87	1.75	.442	.442	.435	.435
32	HXB	T,B,Tr,M,Ind	6 5x6	159 2000	135 2000	707.0	5.75	502 900 BE	N	Se	L	Aus	2.43	2.31	2.12	2.00	.468	.468	.493	.49
33	HXC	T,B,Tr,M,Ind	6 5¼x6	175 2000	148 2000	777.0	5.75	555 900 BE	N	Se	L	Aus	2.43	2.31	2.12	2.00	.468	.468	.493	.49
34	HXD	T,B,Tr,M,Ind	6 5 ¼x6	202 2000	172 2000	855.0	5.75	645 900 BE	N	Se	L	Aus	2.43	2.31	2.12	2.00	.468	.468	.493	.49
35	HXE	T,B,Tr,M,Ind	6 5¾x6	227 2000	193 2000	935.0	6.20	750 1000 BE	N	Se	L	Aus	2.43	2.31	2.12	2.00	.468	.468	.493	.493
36	International U-2A	Tr,Ind	4 3x4	25.8 1800	24 1800	113.1	6.00	82 1200 EA	W	In	I	CNS	1.34	1.16	1.19	1.00	.261	.261	.341	.341
37	U-4	Tr,Ind	4 3⅛x4½	33.5 1800	31.5 1800	152.1	5.90	108 1250 EA	D	In	I	CNS	1.50	1.37	1.34	1.22	.343	.343	.341	.341
38	U-6	Tr,Ind	4 3⅞x5½	43 1500	41 1500	247.7	5.65	182 900 EA	D	In	I	CNS	1.81	1.56	1.59	1.44	.438	.438	.372	.372
39	U-9	Tr,Ind	4 4 8x5	56.5 1500	53 1500	334.4	5.40	229 900 EA	D	In	I	CNS	2.09	1.91	1.87	1.69	.469	.469	.402	.402
40	CRD-211	T	6 3⅞x4½	82.4 3400	73 3200	179.9	6.30	158 1000 EA	N	In	L	Sil	1.68	1.43	1.50	1.28	.320	.320	.372	.371
41	CRD-233	T	6 3⅞x4½	93 3400	80.2 3400	232.6	6.30	176 800 EA		In	L	XCR	1.68	1.44	1.50	1.28	.320	.320	.372	.371
42	BLD-250	T	6 3⅞x4½	99.8 3200	84 3000	250.5	6.30	194 800 EA	D	In	I	XCR	1.65	1.46	1.50	1.31	.332	.332	.342	.341
43	BLD-269	T,B,Ind	6 3⅞x4½	100 3000	88.6 2800	269.1	6.30	216 1000 EA	D	In	I	XCR	1.65	1.47	1.50	1.31	.332	.332	.342	.341
44	RED-361	T,B,Ind	6 4½x4½	126 2800	112 2600	360.8	6.30	278 1000 EA	D	In	I	XCR	2.25	1.62	2.00	1.37	.449	.449	.434	.434
45	RED-401	T	6 4½x5	140 2800	123 2600	400.9	6.30	304 1000 EA	D	In	I	XCR	2.25	1.54	2.00	1.37	.449	.449	.434	.434
46	RED-450	T,B,Ind	6 4½x5	148 2600	133 2600	451.0	6.30	348 1000 EA	D	In	I	XCR	2.25	1.51	2.00	1.37	.449	.449	.434	.434
47	Cont-R6586	T	6 4¼x5½	200 2800	183 2600	586.6	6.03	462 1000 EA	D	In	I	Sil	2.14	1.89	1.98	1.73	.553	.553	.497	.494
48	Kermath Cub	M	4 2¾x3		25 3400	65.0	6.00	40 1700 EA	N	In	L	Sil	1.25	1.12	1.12	.875	.250	.250	.310	.310
49	Jeep	M	4 3⅛x4½		40 2700	134.0	6.48	106 2200 EA	N	In	L		1.53	1.46	1.34	1.23	.359	.359	.373	.373
50	Jeep	M	4 3⅛x4½		61 3600	134.0	6.48	106 2200 EA	N	In	L		1.53	1.46	1.34	1.28	.359	.359	.373	.373
51	Prince	M	6 3⅝x4½		95 3600	221.0	6.50		N	In	L	Sil	1.87	1.87	1.81	1.81	.281	.281	.310	.310
52	Rover	M	6 4x4½		122 3000	320.0	6.90	235 2000 EA	N	In	L	CNS	1.84	1.62	1.62	1.37	.376	.376	.373	.373
53	Mate	M	6 4½x4½		140 3400	404.0	5.50		N	In	L	CNS	2.06	1.87	1.81	1.62	.500	.500	.373	.373
54	Farer	M	6 5x5½		200 2400	678.0	5.70	480 1000 EA	N	Se	L	CNS	2.62	2.37	2.37	2.00	.437	.375	.437	.437
55	Raider	M	12 5¼x6		550 2400	1560.0	5.70	1070 1400 EA	N	Se	I	CNS	1.93	1.93	1.76	1.76	.375	.375	.437	.437
56	Lathrop Standard	M	6 5⅛x6		27 700	412.1		206 600 EA	N	Se	T	CNS	2.25	2.25	2.00	2.00	.375	.375	.437	.437
57	Standard	M	3 5 x6		34 800	453.2		237 700 EA	N	Se	T	CNS	2.25	2.25	2.00	2.00	.375	.375	.437	.437
58	LH	M	4 3⅞x4		38 2200	133.0		92 2000 EA	N	In	L	CNS			1.25	1.12	.312	.312	.312	.312
59	Standard	M	4 5⅛x6		29 700	549.5		233 500 EA	N	Se	T	CNS	2.25	2.25	2.00	2.00	.375	.375	.437	.437
60	Standard	M	4 5 ⅛x6		49 800	617.7		312 600 EA	N	Se	T	CNS	2.25	2.25	2.00	2.00	.375	.375	.437	.437
61	Engineers	M	4 5 x7		64 1000	665.2		373 650 EA	N	Se	L	CNS	2.68	2.50	2.31	2.12	.375	.375	.500	.500
62	Engineers	M	4 6x7		78 1000	791.6		461 700 EA	N	Se	L	CNS	2.68	2.50	2.31	2.12	.375	.375	.500	.500
63	LH	M	6 3⅝x4½		62 2200	282.0		173 550 EA	N	In	L	CNS			1.50	1.37	.312	.312	.375	.375
64	De Luxe LH-D6	M	6 4x4½		107 2500	320.0		226 2500 EA	N	In	L	CNS	1.75	1.62	1.50	1.37	.356	.356	.375	.375
65	LH-Super	M	6 4x4½		132 3200	339.0		132 3200 EA	N	In	L	CNS	1.75	1.62	1.50	1.37	.375	.375	.375	.375
66	Mystic	M	6 4⅛x5		86 1600	524.8		321 1350 EA	N	Se	L	CNS	2.25	2.25	2.00	2.00	.375	.375	.437	.437
67	Mystic	M	6 4⅛x5½		106 1600	584.7		379 900 EA	N	Se	L	CNS	2.25	2.25	2.00	2.00	.375	.375	.437	.437
68	Mystic	M	6 5 x6		155 1500	926.5		561 1200 EA	N	Se	L	CNS	2.68	2.68	2.31	2.31	.437	.437	.500	.500
69	Mystic	M	6 5⅞x6		179 1600	1012.8		640 1100 EA	N	Se	L	CNS	2.68	2.68	2.31	2.31	.437	.437	.500	.500
70	Engineers	M	6 6x7	115 925	118 1000	1187.5		650 925 EA	N	Se	L	CNS	2.68	2.50	2.31	2.12	.375	.375	.500	.500
71	Le Roi A288	Ind	1 7⅛x7		28.5 720	288.9	5.8	195 500 EA	W	In	I	Sil	3.31	2.81	2.00	2.62	.530	.530	.622	.621
72	B45	Ind	2 2⅞x3	10.8 2000	10 2000	45.4	5.8	28 1400 EA	N	In	L	Sil	1.43	1.43	1.06	1.06	.187	.187	.312	.313
73	D91	Ind	4 2⅞x3	20.7 1800	21.3 2000	77.1	5.80	60 1500 EA	N	In	L	Sil	1.43	1.43	1.06	1.06	.188	.188	.312	.313
74	D140	Ind	4 3 x3½		33 2300	140.0	5.85	94 1300 EA	W	In	I	CNS	1.37	1.28	1.18	1.18	.375	.375	.343	.342
75	D176	Ind	4 3⅜x4		38 1800	176.0	5.40	124 1200 EA	W	In	I	CNS	1.68	1.50	1.37	1.25	.373	.373	.372	.372
76	D201	Ind	4 4x4		44 1800	201.0	5.43	140 1200 EA	W	In	I	CNS	1.68	1.50	1.37	1.25	.373	.373	.372	.372
77	D226	Ind	4 4x4		51 1800	226.0	5.09	167 1200 EA	W	In	I	CNS	1.68	1.50	1.37	1.25	.373	.373	.372	.372
78	D471	Ind	4 5x5		70 1200	471.0	5.15	320 900 EA	W	In	I	CNS	1.87	1.81	1.75	1.62	.470	.470	.433	.433
79	D1000	Ind	4 6⅛x7		140 1200	1002.0	4.50	690 650 EA	N	Se	I	Sil	2.81	2.81	2.12	2.50	.625	.625	.624	.624
80	F1500	Ind	6 6⅛x7		208 1200	1503.0	4.50	1035 650 EA	N	Se	I	Sil	2.81	2.81	2.12	2.50	.625	.625	.624	.624
81	H540	T,B,Tr,Ind	V8 4 x4½	140 1800	138 1800	540.0	5.6	417 900 EA	W	In	I	Sil	1.94	1.50	1.62	1.37	.410	.410	.373	.372
82	H2000	Ind	8 6⅛x7		278 1200	2001.0	4.50	1380 650 EA	N	Se	I	Sil	2.81	2.81	2.12	2.50	.625	.625	.624	.624
83	L3000	Ind	12 6⅛x7		416 1200	3006.0	4.50	2075 650 EA	N	Se	I	Sil	2.81	2.81	2.12	2.50	.625	.625	.624	.624
84	L3460	Ind	V12 7⅛x7		600 1500	3468.0	4.57	2550 900 BE	W	In	I	Sil	3.34	2.81	2.75	2.62	.625	.625	.622	.621
85	Mack EN354A-Updraft	T	6 3⅞x5	119 2700	110 2700	354.0	5.50	248 1400 EA	N	In	L	Aus	2.00	1.63	1.76	1.43	.437	.422	.437	.437
86	EN354A-Downdraft	T	6 3⅞x5	121 2700	112 2700	354.0	5.50	260 1400 EA	N	In	L	Aus	2.00	1.63	1.76	1.43	.437	.422	.437	.437
87	EN431A	T *	6 4⅛x5½	142 2500	123 2500	431.0	6.32	303 1200 EA	N	In	I	Aus	2.04	1.75	1.81	1.56	.418	.418	.437	.437

For abbreviations see pages 158 and 159

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ENGINES—*Continued*

Angle Deg.	VALVES: Seats: Inserts Used?	VALVES: Seats: Insert Material (S.A.E. No.)	VALVES: Camshaft Drive	VALVES: Type	PISTONS: Material	PISTONS: Weight with Pins, Rings, Bushings (Oz.)	PISTONS: Piston Pin Diameter and Length (In.)	PISTONS: Number of Rings per Piston	CONNECTING RODS: Material	CONNECTING RODS: Center to Center Length (In.)	CONNECTING RODS: Weight with Bushing and Cap (Oz.)	CRANKSHAFT: Material	CRANKSHAFT: Counter Balance Used	CRANKSHAFT: Crank-Pin: Diameter and Length (In.)	CRANKSHAFT: MAIN BEARINGS: Number	CRANKSHAFT: MAIN BEARINGS: Diameter and Length (In.): Front	CRANKSHAFT: MAIN BEARINGS: Diameter and Length (In.): Rear	CRANKSHAFT: Oil Pressure to	CARBURETOR: Make	CARBURETOR: Size	OVERALL DIMENSIONS (In.): Engine Weight without Carburetor or Ignition (Lb.)	OVERALL DIMENSIONS (In.): Width	OVERALL DIMENSIONS (In.): Height	OVERALL DIMENSIONS (In.): Length	Clutch Housing (S.A.E. Nos.)	Line Number
h)	E	4140	HC	Al	120	1.37x4.93	6	3140	12	157	4140	Y	3.00x2.43	7	3.25x2.09	3.25x3.12	abcegj	Zen	2½	1950*	28	44⅝	60⅞	1, 2, 0	1
30	N		Ch	Al	108	1.37x4.68	5	AS	11	117	4140	Y	2.50x2.45	7	2.75x1.91	2.75x1.91	abcefg	Zen(2)	2	3265*	25	47½	90½		2
30	N		Ch	Al	108	1.37x4.68	5	AS	11	117	4140	Y	2.50x2.45	7	2.75x1.94	2.75x1.91	abcefgr	Zen(2)	2	2200*	25	39½	74⅛		3
30	E	CA	HC	Al	128	1.37x4.94	6	3140	12	237‡	4140	Y	3.00x2.43	7	3.25x2.09	3.25x2.09	abcefgr	Zen(2)	2½	4560*	43⅝	50⅛	108⅛		4
30	E	CA	HC	Al	123	1.37x4.94	6	3140	12	237‡	4140	Y	3.00x2.43	7	3.25x2.09	3.25x2.09	abcefgr	Zen(2)	2½	3650*	43⅝	42⅛	88		5
																										6
30	N		HG	CI	25	.687x2.50	3	3140	5⅛	15	1045	Y	1.50x1.00	2	2.00x1.25	2.00x1.37	abe	Op	⅝	131	16½	15½	18½	5, 6	7
30	N		HG	CI	28	.750x2.56	3	3140	6⅛	21	1045	Y	1.75x1.12	2	2.00x1.56	2.00x1.62	abe	Op	¾	270	16¾	19½	20¼	4, 5	8
30	N		HG	CI	19	.687x2.20	3	3140	5⅛	15	4140	N	1.50x1.00	3	2.00x1.31	2.00x1.37	abe	Op	⅝	270	16¾	19½	20¼	4, 5	9
30	N		HG	AC	21	.687x2.33	3	3140	5⅛	15	4140	N	1.50x1.00	3	2.00x1.31	2.00x1.37	abe	Op	Op	179	14¾	16½	21⅛	5, 6	10
30	N		HG	AC	28	.750x2.56	3	3140	6⅛	21	CS;	N	1.75x1.12	3	2.00x1.56	2.00x1.62	abe	Op	Op	179	14¾	16½	21⅛	5, 6	11
30	N		HG	AC	29.5	.750x2.81	3	3140	6⅛	21	CS;	N	1.75x1.12	3	2.00x1.56	2.00x1.62	abe	Op	Op	285	16¾	19¾	20⅛	4, 5	12
30	N		HG	AC	23.1	.875x2.67	4	1035	7	26	CS;	Op	2.00x1.25	7	2.50x1.31	2.50x1.62	abe	Op	Op	293	16¾	19¾	20⅛	4, 5	13
30	N		HG	AI	24	.875x2.81	4	1035	7	26	CS;	Op	2.00x1.25	7	2.50x1.31	2.50x1.93	abe	Op	1¼	440	15½	21⅛	36½	5	14
30	N		HG	AI	26	.875x2.92	4	1035	7	26	CS;	Op	2.00x1.25	7	2.50x1.31	2.50x1.93	abe	Op	1¼	440	15½	21⅛	36½	5	15
45	N		HG	AI	25	.875x2.92	4	1035	7	26	CS;	Y	2.00x1.25	7	2.50x1.31	2.50x1.93	abe	Op	1¼	440	15½	21⅛	36½	5	16
45	N		HG	AC	31	1.00x2.92	4	1040	8	37	CS;	Op	2.00x1.50	7	2.50x1.31	2.50x1.93	abe	Op	1¼	445	16¾	21⅛	35⅛	3, 4, 5	17
45	N		HG	AC	35.5	1.00x3.17	4	1040	8	37	CS;	Op	2.00x1.50	7	2.50x1.31	2.50x2.12	abe	Op	1¼	580	18½	24⅛	38⅛	3, 4, 5	18
45	N		HG	AC	37.5	1.00x3.26	4	1040	8	37	CS;	Op	2.00x1.50	7	2.50x1.31	2.50x2.12	abe	Op	1¼	605	17⅝	24⅛	39⅛	3, 4, 5	19
30	N		HG	AC	40.5	1.00x3.51	4	1040	8	37	CS;	Op	2.00x1.50	7	2.50x1.31	2.50x2.12	abe	Op	1¼	605	17⅝	24⅛	39⅛	3, 4, 5	20
45	N		HG	AI	44.5	1.12x3.44	4	1035	8	39.2	CS;	Y	2.00x1.50	7	2.50x1.31	2.50x2.12	abe	Op	1¼	605	17⅝	24⅛	39⅛	3, 4, 5	21
45	N		HG	AC	50	1.12x3.56	4	1035	9⅛	50	CS;	Op	2.25x1.50	7	2.62x1.75	2.62x2.12	abe	Op	1¼	630	17⅝	24⅛	39⅛	3, 4, 5	22
45	N		HG	AC	44	1.12x3.56	4	3140	8⅞	50	CS;	Op	2.25x1.50	7	2.62x1.75	2.62x2.75	abce	Op	1½	820	22½	27½	41⅛	2, 3	23
45	N		HG	AC	50	1.12x3.56	4	3140	8⅞	50	CS;	Op	2.25x1.50	7	2.62x1.75	2.62x2.75	abce	Op	1½	811	26⅛	25⅛	42⅛	2, 3	24
(h)	N		HG	AI	63.5	1.31x3.62	4	3140	9⅝	50	CS;	Op	2.25x1.50	7	2.62x1.75	2.62x2.75	abce	Op	1½	825	26⅛	25⅛	42⅛	2, 3	25
45	N		HG	AI	60	1.25x3.93	5	3140	9⅝	78	CS;	Op	2.62x2.00	7	3.00x1.93	3.00x2.93	abce	Op	2	1345	26⅛	34½	47½	2	26
45	N		HG	AI	63	1.25x4.07	5	3140	9⅝	78	CS;	Op	2.62x2.00	7	3.00x1.93	3.00x2.93	abce	Op	1½	1000	23½	32½	46½	2, 3	27
(h)	N		HG	AI	65	1.25x4.07	5	E-4342	9⅝	97	CS;	Op	3.00x2.00	7	3.50x1.93	3.00x2.93	abce	Op	1½	1010	23½	32½	46½	2, 3	28
(h)	N		HG	AI	66	1.50x4.20	5	E-4342	9⅝	97	CS;	Op	3.00x2.00	7	3.50x1.93	3.50x2.93	abce	Op	1½	1195	25½	35½	46½	1, 2	29
30	N		HG	AI	66.0	1.50x4.11	4	E-4342	9⅝	97	1045;	Y	3.00x2.00	7	3.50x1.93	3.50x2.93	abce	Op	1½	1195	25½	35½	46½	1, 2	30
30	N		HG	AI	98	1.50x4.43	4	3140	12	166	1045;	Op	3.00x2.25	7	3.50x2.37	3.50x3.50	abce	Op	2	1470	26⅛	36½	47½	1, 2	31
30	N		HG	AI	108	1.50x4.56	4	3140	12	166	1045;	Op	3.00x2.25	7	3.50x2.37	3.50x3.50	abce	Op	2	1810	28½	40½	55⅛	00, 0, 1	32
30	N		HG	AI	119	1.50x4.81	4	3140	12	166	1045;	Op	3.00x2.25	7	3.50x2.37	3.50x3.50	abce	Op	2	1810	28½	40½	55⅛	00, 0, 1	33
30	N		HG	AI	126	1.50x5.06	4	3140	12	166	1045;	Op	3.00x2.25	7	3.50x2.37	3.50x3.50	abce	Op	2	1830	28½	40½	55⅛	00, 0, 1	34
45	N		HG	CI	35	.919x2.50	4	1040	7⅛	33	1046;	N	1.75x1.19	3	2.12x1.37	2.12x1.84	abceg	Zen	⅝	478*	17½	33½	30½	4	36
45	N		HG	CI	53	1.11x2.78	3	1040	8	57	1046;	N	2.25x1.23	3	2.50x1.49	2.50x1.49	abceg	Own	1	660*	18⅛	34⅛	33½	4	37
45	E	MA	HG	CI	84	1.31x3.25	4	1040	10	93	1046;	N	2.50x1.72	3	2.75x1.56	2.75x1.56	abceg	Own	1¼	955*	20½	38¼	37	2	38
45	E	MA	HG	CI	115	1.50x3.71	5	1040	11	124	1046;	N	3.00x1.97	3	3.25x1.87	3.25x1.87	abcdeg	Own	1¼	1250*	23½	42½	40½	1	39
45	E		Ch	AI	25	.937x2.88	4	bb	8¼	34	bb;	Y	2.00x1.31	4	2.62x1.54	2.62x2.09	abcde	Zen	1⅛	593*	24⅛	33½	42½		40
45	E	MA	Ch	AI	25	.937x2.88	4	1040	8¼	34	bb;	Y	2.00x1.31	4	2.62x1.54	2.62x2.09	abcde	Zen	1⅛	593*	24⅛	33½	42½		41
45	E		HG	AI	29	.919x2.95	4	(aa)	8⅞	43	C1046	Y	2.12x.168	4	2.70x1.12	2.70x1.23	abcdeg	Zen	1¼	624*	24⅛	33½	42½		42
(n)	E	MA	HG	AI	31	.919x2.95	4	(aa)	8⅞	43	C1046	Y	2.12x1.68	4	2.70x1.12	2.70x1.23	abcdeg	Zen	1¼	875*	23½	40½	47½		43
(n)	E	MI	HG	AI	32	1.10x3.55	4	(aa)	9	61	C1046;	Y	2.75x1.68	7	3.25x1.34	3.25x1.84	abcdeg	Zen	1¼	874*	23½	40½	47½		44
(n)	E		HG	AI	48	1.10x3.55	4	(aa)	9	61	C1046;	Y	2.75x1.68	7	3.25x1.34	3.25x1.84	abcdeg	Hol(2)	1¼	1067*	26½	42½	47½		45
(n)	E	MI	HG	AI	56	1.10x3.80	4	(aa)	9	61	C1046	Y	2.75x1.68	7	3.25x1.34	3.25x1.84	abcdeg	Hol(2)	1¼	1090*	26½	42½	47½		46
(n)	E		HG	AI	92	1.49x3.98	5	(aa)	10.5	101	C1046;	Y	3.25x1.68	7	3.25x1.34	3.25x1.84	abcdeg	Hol(2)	1¼	1076*	26½	45½	47½		46
											1045	Y	3.00x1.93	7	3.25x1.59	3.25x2.62	abcdeg	Hol	1¾	1863					47
30	N		HG	CI	19	.687x2.18	3	CS	5⅛	15	CS	N	1.50x1.00	3	2.00x1.37	2.00x1.31	abcr	Str	⅝	300*	18½	17⅝	29⅛		
45	N		Ch	AI	12	.812x2.78	3	MS	9⅛	34	1040	Y	1.93x1.31	3	2.33x1.75	2.33x1.92	abcr	Str	1¼	495	21¼	24⅛	36		48
45	N		Ch	AI	12	.812x2.78	3	MS	9⅛	34	1040	Y	1.93x1.31	3	2.33x1.75	2.33x1.92	abcr	Str	1¼	495	21¼	24⅛	36		49
30	N		HG	AI	24	.875x2.79	4	CS	7	26	CS	N	2.00x1.25	7	2.50x1.93	2.50x1.87	abcr	Str	1¼	495	21¼	24⅛	36		50
30	N		HG	AI	40	1.00x3.51	4	CS	8	39	CS	N	2.00x1.50	7	2.50x2.12	2.50x1.37	abcr	Str	1¼	620*	24	24⅛	42⅝		51
45	N		HG	AI		1.12x3.62	4	CS	9	51	CS	Y	2.25x1.12	7	2.68x2.75	2.68x1.75	abcr	Str	1¾	940*	21½	27⅞	52⅜		52
45	N		SB	Als	82	1.25x4.50	4	DFS	11	80	CS	N	2.25x2.23	7	2.50x3.91	2.50x2.62	abcder	Str(2)	2	1125*	24½	29⅝	56⅛		53
						1.25x4.50	4	CNS	11	184	CNS	Y	2.75x2.25	7	3.00x3.84	3.00x2.25	abcder	Str(4)	2	1570*	26½	34½	69⅝		54
47			HG	CI	160	1.37x4.62	4	AS	12⅛	96	CNS	N	1.87x2.75	4	2.25x5.00	2.25x4.00	abe	Zen	1½	1400	25	22¼	60½		55
45			HG	CI	179	1.37x5.00	4	AS	12⅛	96	CNS	N	1.87x2.75	4	2.25x5.00	2.25x4.00	abe	Zen	1½	1450	25	22¼	60½		56
30			HG	AI		.750x2.81	3	AS	6⅛	21	CNS	N	1.87x2.75	4			abe	Zen	1	440	17¼	14⅜	40½		57
45	E	Spec	HG	CI	179	1.37x5.00	4	AS	12⅛	96	CNS	N	2.00x1.50	3	2.00x2.18	2.09x2.62	abe	Zen	1½	1700	25¼	22¼	68½		58
45	E	Spec	HG	CI	186	1.50x5.00	4	AS	13¼	172	CNS	N	1.87x2.75	5	2.25x5.00	2.25x4.00	abe	Zen	1½	1750	25¼	22¼	68½		59
30		Spec	HG	CI	204	1.50x5.50	4	AS	13¼	172	CNS	N	1.87x2.75	5	2.25x5.00	2.25x4.00		Zen		2100	29¼	24	74½		60
30	E	Spec	HG	AI	40	1.00x3.50	4	AS	8		CNS	N	2.75x2.75	5	3.00x2.50	3.00x3.50	abce	Zen		2290	29¼	24	75		61
30			HG	AI	98	1.37x3.87	4	DFS	8	38	Spec	N	2.00x1.50	7	2.50x1.31	2.50x2.12	abe	Zen	1¼	830	21¼	17	51		62
45			HG	CI	96	1.37x3.87	4	Dur	12⅛	68	CNS		2.00x1.50	7	2.50x1.31	2.50x2.12	abe	Zen	1¼	820	21¼	25	51		63
45			HG	CI	104	1.37x4.12	4	Dur	12⅛	68	CNS	N	2.00x1.50	7	2.50x1.31	2.50x1.12	abe	Hol		1700	24½	27⅞	68		64
45			HG	CI	176	1.50x5.00	4	AS	13¼	164	CNS	N	2.25x2.37	7	2.75x3.25	2.75x1.12	abce	Hol		1700	24½	27⅞	68		65
45			HG	CI	176	1.50x5.12	4	AS	13¼	164	CNS	N	2.12x2.75	7	2.62x5.00	2.62x4.00	abe	Hol		1700	24½	27⅞	68		66
45	E	Spec	HG	CI	204	1.50x	4	AS	13¼	172	CNS	N	2.75x2.75	7	3.00x3.37	3.00x3.25	abce	Hol		2435	24½	29⅝	78½		67
											CNS	N	2.75x2.75	7	3.00x3.50	3.00x3.50	abcde	Zen(2)	1½	2460	24½	29⅝	78½		68
45	E	T-12	HG	AI	256	2.25x6.12	4	1040	15	336	1040	Y	5.00x2.15	2	5.00x2.15	5.00x2.15	abcdg	Own	1⅝	2950	31	24	92		69
45	N		HG	AI	11⅜	.750x2.46	3	1040	6⅛	24	ACI	Y	1.93x1.37	2	310 (9)	310 (9)	PS	Own	1⅝	2275	57⅜	49	40½	3	70
45	N		HG	AI	11⅜	.750x2.46	3	1040	6⅛	24	1040	Y	1.93x1.37	2	310 (9)	310 (9)	PS	Zen	⅝	250	16⅛	19⅞	17	4	71
45	E	T-12	HG	AI	46	1.00x2.93	3	1040	7⅛	33	1045	Y	2.31x1.06	2	2.50x1.43	2.50x1.43	abcg	Zen	⅝	350	16⅛	19⅞	24	4	72
45	E	T-12	HG	ACI	54	1.00x3.31	4	1045	7⅛	60	1045	Y	2.37x1.50	3	2.50x1.62	2.50x1.43	abcg	Zen	⅝	550	16⅛	31⅛	33	4, 5	73
45	E	T-12	HG	AI	34	1.00x3.43	4	1045	7⅛	60	1045	Y	2.37x1.50	3	2.43x1.62	2.46x1.75	abcg	Zen	1	580	20	30	35½	4	74
45	E	T-12	HG	AI	34	1.00x3.43	4	1045	7⅛	60	1045	Y	2.37x1.50	3	2.43x1.62	2.46x1.75	abcg	Zen	1	580	20	30	35½	4	75
45	E	T-12	HG	AI		1.50x4.31	4	1040	12	80	1045	Y	2.37x1.50	3	2.43x1.62	2.61x1.75	abcg	Zen	1	590	20	31	35½	4, 2	76
45	E	T-12	HG	AI	200	1.75x6.12	4	1045	14	236	1045	Y	2.87x2.37	3	3.00x3.12	3.03x4.12	abcg	Zen	1	580	20	30	35½	4, 2	77
45	E	T-12	HG	AI	200	1.75x6.12	4	1045	14	236	1045	N	3.50x3.75	3	3.93x5.25	3.93x5.25	abcg	Zen	1½	1645	23	43½	45½	1	78
45	E	T-12	HG	AI	62	1.25x3.93	4	1040	8⅛	52	4140	Y	3.50x3.75	4	3.93x5.25	3.93x5.25	abcg	Zen(2)	1½	2500*	34	59	62	00, 0	79
45	E	T-12	HG	AI	200	1.75x6.12	4	3140	15	**	1045	Y	2.75x1.25	5	3.25x1.12	3.25x1.12	abcg	Zen(2)	1½	3750	34	59	80	00, 0	80
45	E	T-12	HG	AI	200	1.75x6.12	4	3140	15	**	1045	Y	3.50x3.75	3	3.93x5.25	3.93x5.25	abcg	Zen(2)	1½	1300	30⅝	39¼	37	1	81
45	E	T-12	HG	AI	200	1.75x6.12	4	3140	15	**	4140	N	3.50x3.75	4	3.93x5.25	3.93x5.25	abcg	Zen(2)	2	3900	45	65	64	00	82
45	E	T-12	HG	AI	256	2.25x6.37	4	1040	15	336	4140	Y	5.00x2.18	8	5.50x2.37	5.50x4.31	abcdg	Zen(4)	1½	5300	45	65	78	00	83
h)	E	Nit	HG	Alt	41	1.00x3.40	5	4130	11¼	61	1046		2.37x1.28	7	3.00x1.56		abcef	Zen	1¼	1041	27.95	37.28	46.46	3	85
(h)	E	Nit	HG	Alt	41	1.00x3.40	5	4130	11¼	61	1046		2.37x1.28	7	3.00x1.56		abcef	Zen	1¼	1041	27.95	37.28	46.46	3	86
h)	E	Nit	HG	Alt	59	1.31x3.56	5	4130	10⅞	90	1046		2.75x1.72	7	3.50x1.68		abcefg	Zen	1¼	1580	27.62	45.00	47.75	3	87

For abbreviations see pages 158 and 159

For page on which Directory of Manufacturers appears, see Table of Contents page 65

AMERICAN GASOLINE

Line Number	ENGINE MAKE AND MODEL		Designed for	Number of Cylinders, Bore and Stroke (In.)	MAXIMUM BRAKE Hp. at Specified R.P.M.		Piston Displacement (Cu. In.)	Compression Ratio	Maximum Torque at R.P.M. (Lb. Ft.) with or without Accessories			Cylinder Liners—Type	Crankcase—Upper Half Integral with Cylinders	VALVES								
					With Bare Engine	With Standard Accessories								Arrangement	Exhaust Head Material S.A.E. No.	Max. Head Diameter (In.)		Min. Port Diameter (In.)		Lift (In.)		Stem Diameter (In.)	
																Intake	Exhaust	Intake	Exhaust	Intake	Exhaust	Intake	Exhaust
1	Mack, Cont.	EN471A	T	6 4 1/4 x5 1/2	150 2400	138 2400	471.0	6.12	367 1000	(EA)	N	In	I	Aus	2.04	1.75	1.81	1.56	.418	.418	.437	.437
2		EN510A	T	6 4 1/4 x5 1/2	158 2400	146 2400	510.0	6.07	379 1000	(EA)	N	In	I	Aus	2.04	1.75	1.81	1.56	.418	.418	.437	.437
3		EN510A	B	6 4 1/4 x5 1/2	158 2400	139 2400	510.0	6.07	368 1000	(EA)	N	In	I	Aus	2.04	1.75	1.81	1.56	.418	.418	.437	.437
4		ENF510A	FA	6 4 1/4 x5 1/2	161 2700	148 2700	510.0	6.34	388 1200	(EA)	N	In	I	Aus	2.04	1.75	1.81	1.56	.418	.418	.437	.437
5		EN672	B	6 4 1/2 x6	200 2400	172 2400	672.0	6.15	496 1150	(EA)	D	In	I	Aus	2.27	1.96	2.06	1.75	.500	.500	.500	.500
6		EN707A	T	6 5x6	196 2000	173 2000	707.0	5.85	536 1000	(EA)	N	In	I	Aus	2.27	1.96	2.06	1.75	.500	.500	.500	.500
7		ENF707A	FA	6 5x6	213 2500	198 2500	707.0	6.10	560 1200	(EA)	N	In	I	Aus	2.27	1.96	2.06	1.75	.500	.500	.500	.562
8	Minneapolis-Moline	165-4	Ind,Tr	4 3 1/2 x4	26 1400	25 1400	165.1	5.75	105 1000	(BE)	N	Se	Hh		1.46	1.46	1.25	1.25	.355	.355	.341	.341
9		206A-4	Ind	4 3 1/2 x5	40 1500	38 1500	206.5	6.15	152 1100	(BE)	N	Se	Hh		1.46	1.46	1.25	1.25	.355	.355	.341	.341
10		263-4	Ind,Tr	4 4 1/4 x5	51 1300	48 1300	263.7	5.40	210 1100	(BE)	N	Se	I		1.72	1.59	1.50	1.37	.490	.490	.434	.434
11		403-4	Ind,Tr	4 4 1/2 x6	65 1100	60 1100	403.2	5.40	304 1100	(BE)	N	Se	I		1.84	1.72	1.62	1.50	.490	.490	.434	.434
12		425-6	Ind	6 4 1/4 x5	82 1350	73 1300	425.5	5.40	324 1100	(BE)	N	Se	I		1.72	1.59	1.50	1.37	.490	.490	.434	.434
13		605-6	Ind	6 4 1/2 x6	100 1200	87 1100	605.0	5.25	446 800	(BE)	N	Se	I		1.84	1.72	1.62	1.50	.490	.490	.434	.433
14		1210-12A	Ind	12 4 1/2 x6	210 1300	198 1300	1210.0	5.40	870 900	(BE)	N	Se	I		1.84	1.72	1.62	1.50	.490	.490	.434	.434
15	Norberg	230	M	6 3 1/2 x4 1/2		90 3000	230	6.90			N	In	L		1.43	1.25			.211	.305	.310	.310
16		320	M	6 4x4 1/2		103 2400	320	6.50			N	In	L		1.50	1.37			.209	.351	.372	.372
17		340	M	6 4x4 1/2		135 3000	339	7.10			N	In	L		1.71	1.56			.207	.351	.372	.372
18	Oliver	88HC	Tr	4 3 1/4 x3 1/2			129.3	6.75			W	In	I	Sil	1.31	1.12	1.18	.995	.312	.281	.375	.375
19		90	Tr	4 4 1/2 x5 1/2		56.7 1125	443.0	4.10	250	850 (EA)	W	In	I	Sil	2.31	2.31	2.00	2.00	.437	.437	.437	.437
20		99	Tr	4 4 1/2 x5 1/2		65 1125	443.0	5.04	295	850 (EA)	W	In	I	Sil	2.31	2.00	2.00	1.75	.437	.437	.437	.437
21		77HC	Tr	6 3 1/2 x3 1/2		35.3 1600	193.9	6.75			W	In	I	Sil	1.31	1.12	1.18	.995	.312	.281	.375	.375
22		88HC	Tr	6 3 1/2 x4		44.9 1600	231.0	6.75			W	In	I	Sil	1.40	1.28	1.31	1.18	.360	.360	.372	.371
23	Packard	1M-245	M	6 3 1/2 x4 1/2		100 3200	245.0	7.00	185 1600	(EA)	N	In	L	Aus	1.67	1.43			.318	.318	.342	.340
24		1M-356	M	8 3 1/2 x4 1/2		150 3200	356.0	7.00	265 2200	(EA)	N	In	L	Aus	1.67	1.43			.342	.342	.342	.340
25	Reo	GC-245	T,B	6 3 1/2 x4 1/2	89 3100		245.0	6.20	191 1200	BE	N	In	L	2112	1.78	1.62			.312	.312	.373	.371
26		GC-288	T,B	6 3 1/2 x5	98 3000		288.0	6.20	225 1200	BE	N	In	L	2112	1.78	1.62			.312	.312	.373	.371
27		GC-310	T,B	6 3 1/2 x5	101 3000		310.0	6.20	243 1000	BE	N	In	L	2112	1.78	1.62			.312	.312	.373	.371
28	Scripps	34	M	4 3 1/2 x4		32 2200	134.0	5.50	92 2000	(EA)		In	L	Sil	1.48	1.35	1.25	1.12	.250	.250	.310	.310
29		35	M	4 3 1/2 x4		50 3200	134.0	5.50	92 2000	(EA)		In	L	Sil	1.48	1.35	1.25	1.12	.250	.250	.310	.310
30		96-97	M	6 3 1/2 x4 1/2		95 3000	221.0	5.85	187 1200	BE		In	L	Sil	1.60	1.39	1.43	1.12	.281	.281	.312	.312
31		104-105	M	6 4x4 1/2		110 3000	320.0	5.63	239 1700	BE		In	L	Sil	1.75	1.62	1.50	1.37	.322	.322	.373	.373
32		6-339	M	6 4x4 1/2		140 3200	339.0	6.9	265 2000			In	L	Sil	1.83	1.67	1.72	1.50	.356	.356	.373	.373
33		152-153	M	6 4 1/2 x5 1/2		169 3000	447.0	6.20				Se	L	Sil	2.25	2.25			.375	.375	.437	.437
34		154, 5, 6, 7	M	6 4 1/2 x5 1/2		155 3000	447.0	6.20				Se	L	Sil	2.25	2.25			.375	.375	.437	.437
35		168-169	M	6 4 1/2 x5 1/2		175 2400	549.0	5.75				Se	L	Sil	2.37	2.28			.405	.375	.437	.437
36		178-179	M	6 4 1/2 x5 1/2		200 2400	611.0	5.75				Se	L	Sil	2.37	2.28			.405	.375	.437	.437
37		208-209	M	6 5x5 1/2		225 2400	678.0	5.85				Se	L	Sil	2.50	2.37			.406	.375	.437	.437
38		V43M-100, V47M-100	M	8 3.18x3 1/2		100 3600	239.0	6.15	178	2200 (BE)		In	L	CNS	1.53	1.53			.292	.292	.311	.311
39		302-303	M	12 4 1/4 x5 1/2		304 2400	894.0	6.20				Se	L	Sil	2.25	2.25			.375	.375	.437	.437
40		304-305	M	12 4 1/4 x5 1/2		250 2400	894.0	6.20				Se	L	Sil	2.25	2.25			.375	.375	.437	.437
41		306-307	M	12 4 1/4 x5 1/2		286 2400	894.0	6.20				Se	L	Sil	2.25	2.25			.375	.375	.437	.437
42	Sterling	Viking II-TC-6	Tr,Ind	6 8x9		450 1200	2714.0	▲	2015	900 (EA)	W	Se	I	Sil	2.59	2.59			.556	.556	.557	.557
43		Viking II-TC-6	Tr,Ind	6 8x9		345 900	2714.3	▲	2015	900 (EA)	W	Se	I	Sil	2.59	2.59			.556	.556	.557	.557
44		Viking II-T-8	M	8 8x9		600 1200	3619.0	5.20	2685	900 (EA)	W	Se	I	Sil	2.59	2.59			.556	.556	.557	.557
45		Viking II-TC-8	Tr,Ind	8 8x9		600 1200	3619.0	▲	2685	900 (EA)	W	Se	I	Sil	2.59	2.59			.556	.556	.557	.557
46		Viking II-TC-8	Tr,Ind	8 8x9		480 900	3619.0	▲	2685	900 (EA)	W	Se	I	Sil	2.59	2.59			.556	.556	.557	.587
47	Thorobred	KK	M	2 3 1/2 x3 1/2	11 1100	10 1100	105.0	4.00	54	800 (EA)	N	Se	L	NCI	1.62	1.62	1.43	1.43	.300	.300	.375	.375
48		Meteor CK	M	4 2 1/2 x3 1/2	18 2600	16 2600	61.3	5.70	40	1700 (BE)	N	Se	L	Sil	1.12	.937	1.00	.812	.228	.228	.250	.312
49		DS	M	4 2 1/2 x4	19 1800	16 1800	93.0	4.66	53	1300 (EA)	N	In	L	Sil	1.46	1.34	1.31	1.18	.250	.250	.312	.312
50	Arrowhead, Jr.		M	4 3 1/2 x4	39 2600	35 2600	133.0	5.58	92	1200 (EA)	N	In	L	Sil	1.34	1.34	1.18	1.18	.281	.281	.312	.312
51	Arrowhead		M	4 3 1/2 x4 1/2	43 2200	37 2200	186.0	5.50	128	900 (EA)	N	In	L	Sil	1.56	1.56	1.37	1.37	.281	.281	.375	.375
52		AA	M	4 3 1/2 x4 1/2	27 1400	24 1400	219.0	4.00	113	700 (EA)	N	Se	L	NCI	1.62	1.62	1.43	1.43	.300	.300	.375	.375
53		F	M	4 4 1/4 x5	39 1400	36 1400	259.4	4.00	142	1000 (EA)	N	Se	L	NCI	1.93	1.93	1.75	1.75	.300	.300	.375	.375
54		B	M	4 4 1/4 x5	47 1800	44 1800	318.0	4.00	180	900 (EA)	N	Se	L	CNS	2.09	2.09	1.93	1.93	.300	.300	.375	3.75
55		BB-4	M	4 4 1/4 x6	59 1600	56 1600	382.0	4.00	224	1100 (EA)	N	Se	L	Sil	2.34	2.34	2.12	2.12	.300	.300	.437	.437
56		BC-4	M	4 5x7	60 1200	56 1200	550.0	4.00	282	900 (EA)	N	Se	L	Dia	2.75	.275	.237	2.37	.375	.375	.625	.625
57		BCS-4	M	4 5 1/2 x7	75 1100	71 1100	727.0	4.00	409	900 (EA)	N	Se	L	Dia	2.75	2.75	2.37	2.37	.375	.375	.625	.625
58		BC-Super-4	M	4 6x7	82 1100	78 1100	791.7	4.00	465	700 (EA)	N	Se	L	Dia	2.75	.275	2.37	2.37	.375	.375	.625	.625
59		Hiawatha Spec.	M	6 4x4 1/2	88 2800	83 2800	320.0	5.75	210	1000 (BE)	N	In	L	Sil	1.68	1.43	1.50	1.25	.375	.375	.375	.375
60		Arrow-Super-6	M	6 4 1/2 x4 1/2	98 2500	95 2500	404.0	5.38	286	800 (EA)	N	In	L	Sil	1.93	1.43	1.75	1.25	.375	.375	.375	.375
61		BB-6	M	6 4 1/2 x6	84 1725	80 1725	572.5	4.00	379	900 (EA)	N	Se	L	Sil	2.34	2.34	2.12	2.12	.300	.300	.437	.437
62		BBS-6	M	6 5x6	105 1500	101 1500	707.0	4.00	420	900 (EA)	N	Se	L	Sil	2.34	2.34	2.12	2.12	.300	.300	.437	.437
63		BC-6	M	6 5x7	94 1100	90 1100	825.0	4.00	452	1000 (EA)	N	Se	L	Dia	2.75	2.75	2.37	2.37	.375	.375	.625	.625
64		BCS-6	M	6 5 1/2 x7	116 1100	112 1100	1091.0	4.00	586	850 (EA)	N	Se	L	Dia	2.75	2.75	2.37	2.37	.375	.375	.625	.625
65		BC-Super-6	M	6 6x7	128 1100	124 1100	1187.5	4.00	630	875 (EA)	N	Se	L	Dia	2.75	2.75	2.37	2.37	.375	.375	.625	.625
66	Twin Coach	FTC-180	B	6 4 1/2 x4 1/2	180 2800	162 2800	404.0	7.30	380	1600 (EA)	D	In	I	Sil	1.77	1.68	1.62	1.50	.375	.375	.373	.373
67	Universal	Fisherman-WM	M	1 4 1/2 x4 1/2		8 1200	67.6	5.02			N	In	L	Sil	1.87	1.87	1.62	1.62	.250	.250	.375	.375
68		Blue Jacket-AFTL	M	2 3x3 1/2		12 2200	49.5	5.79			N	In	L	Sil	1.68	1.68	1.50	1.50	.250	.250	.375	.375
69		Atomic Four-UJ	M	4 2 1/2 x3 1/2		25 3500	64.5	6.32			N	In	L	Sil	1.21	1.03	1.06	.875	.240	.240	.312	.312
70		Utility Four-BN	M	4 2 1/2 x4		25 2500	95.0	4.70			N	In	L	Sil	1.25	1.25	1.12	1.12	.234	.234	.312	.312
71		Flexifour-FA	M	4 3x3 1/2		40 3500	99.0	6.54			N	In	L	Sil	1.68	1.68	1.50	1.50	.312	.312	.375	.375
72		Superfour-LSC	M	4 3 1/2 x4 1/2		50 3000	169.3	5.70			N	In	L	Sil	1.56	1.56	1.37	1.37	.312	.312	.375	.375
73		Blue Jacket Six-AMS	M	6 3x3 1/2		60 3500	140.5	6.54			N	In	L	Sil	1.68	1.68	1.50	1.50	.312	.312	.375	.375
74		Cruiser Six-HCS	M	6 3 1/2 x4 1/2		90 3000	260.0	6.25			N	Se	L	Sil	1.68	1.68	1.50	1.50	.337	.337	.375	.375
75		Sea Lion Six-LHS	M	6 3 1/2 x4 1/2		110 3400	260.0	6.25			N	Se	L	Sil	1.68	1.68	1.50	1.50	.337	.337	.375	.375
76		Cruiser Eight-GCE	M	8 3 1/2 x4 1/2		125 3000	347.0	5.75			N	Se	L	Sil	1.68	1.68	1.50	1.50	.337	.337	.375	.375
77		Sea Lion Eight-LCE	M	8 3 1/2 x4 1/2		141 3400	347.0	5.75			N	Se	L	Sil	1.68	1.68	1.50	1.50	.337	.337	.375	.375
78	Vimalert	V-1700	M	12 5 1/2 x6		1000 2600	1710.0	6.65	2020	2600 EA	W	Se	I	R18	2.00	1.75	1.56	1.37	.538	.533	.622	.622
79	Waukesha	12 ICK	Ind	4 2 1/2 x3 1/2	18 2600	14 2000	61.3	5.70	40	1700 (BE)	N	Se	L	Sil	1.12	.937	1.00	.812	.228	.250	.312	.312
80		12 FC	T,Tr,Ind	4 3 1/2 x4	32 2600	24 1800	133.0	5.58	86	1200 (BE)	N	In	L	Sil	1.34	1.34	1.18	1.18	.281	.281	.312	.312
81		12 XAH	T,Ind	4 3 1/2 x4 1/2	43 2200	36 1800	185.0	5.50	129	900 (BE)	N	In	L	Sil	1.56	1.56	1.37	1.37	.302	.275	.375	.375

For abbreviations see pages 158 and 159

For page on which Directory of Manufacturers appears, see Table of Contents page 65

ENGINES—*Continued*

VALVES				PISTONS			CONNECTING RODS				CRANKSHAFT								CARBURETOR			OVERALL DIMENSIONS (In.)				
	Seats													MAIN BEARINGS												
Angle (Deg.)	Inserts Used?	Insert Material (S.A.E. No.)	Camshaft Drive—Type	Material	Weight with Pins, Rings, Bushings (Oz.)	Piston Pin Diameter and Length (In.)	Number of Rings per Piston	Material	Center to Center Length (In.)	Weight with Bushing and Cap (Oz.)	Material	Counter Balance Used	Crank-Pin Diameter and Length (In.)	Number	Diameter and Length (In.) Front	Diameter and Length (In.) Rear	Oil Pressure to—	Make	Size	Engine Weight without Carburetor or Ignition (Lb.)	Width	Height	Length	Clutch Housing (S.A.E. No.)	Line Number
(h)	E	Nif	HG	Al	59	1.31x3.83	5	4130	10½	90	1046		2.75x1.45	7	3.50x1.68		abcefg	Zen	13/4	1668	28.25	50.50	47.75	2	1
(h)	E	Nif	HG	Al	66	1.31x3.91	5	4130	10½	90	1046		2.75x1.68	7	3.50x1.68		abcefg	Zen	13/4	1650	28.25	50.50	47.75	2	2
(h)	E	Nif	HG	Al	66	1.31x3.91	5	4130	10½	90	1046		2.75x1.68	7	3.50x1.62		abcefg	Zen	13/4	1650	30¾‡	41½‡	47¾‡	2	3
(h)	E	Nif	HG	Al	66	1.31x3.91	5	4130	10½	90	1046		2.75x1.72	7	3.50x1.68		abcefg	Zen	13/4	1650	28.25	44.64	47.75	2	4
(h)	E	Nif	HG	Al	86	1.43x4.18	5	4130	11¼	113	1046		3.00x1.87	7	4.00x1.51		abcefg	Zen	13/4	1802	33¼‡	54¼‡	49‡	1	5
(h)	E	Nif	HG	Al	99	1.43x4.43	5	4130	11¼	113	1046		3.00x2.09	7	4.00x1.57		abcefg	Hol	13/4	1964	28.06	52.79	53¼‡	1	6
(h)	E	Nif	HG	Al	89	1.43x4.43	5	4130	11¼	113	1046		3.00x2.09	7	3.50x1.57		abcefg	Zen	13/4	1942	28.06	52.79	53¼‡	1	7
45	E	ACI	HG	CI	56	1.00x3.00	4	DFS	9	54	DFS	N	2.62x1.28	2	SAE212(7)	3.00x2.18	abeft	MaS	1	x600	25¾	32½	37½	4	8
45	E	ACI	HG	CI	54	1.00x3.00	4	DFS	8¾	45	DFS	N	2.62x1.28	3	SAE212(7)	3.00x2.18	abeft	MaS	1	x670	25¾	32½	37½	4	9
45	E	ACI	HG	CI	85	1.25x3.87	4	DFS	10	90	DFS	N	2.57x2.22	3	2.91x2.18	2.91x3.50	abcefgt	MaS	1¼	x1150	25¾	41½	45½	2	10
45	E	ACI	HG	CI	99	1.25x4.12	4	DFS	11¼	97	DFS	N	2.75x2.09	3	2.91x2.18	2.91x3.50	abcefgt	MaS	1¼	x1250	25¾	47½	45½	2	11
45	E	ACI	HG	CI	85	1.25x3.87	4	DFS	10	90	DFS	Y	2.57x2.22	4	2.91x2.18	2.91x3.50	abcefgt	Zen	1½	x1800	28¾	45½	59¼	1	12
45	E	ACI	HG	CI	108	1.25x4.25	4	DFS	11¼	100	DFS	Y	2.75x2.09	4	2.91x2.18	2.91x3.50	abcefgt	Zen	1½	x1900	28¾	48½	59¼	1	13
45	E	ACI	HG	CI	108	1.25x4.25	4	DFS	11¼	100	DFS	Y	2.75x2.09	4	2.91x2.18	2.91x3.50	abcefgt	Ens	1½	6150	48¾	71½	111¾		14
	N		HG	Al		.875x1.81	4		7		1045:	N	2.00x1.25	7	2.50x1.31	2.50x1.93	ar	Zen	1½	720	25	23½	45½		15
	N		HG	Al		1.00x2.43	4		8		1045:	N	2.00x1.50	7	2.50x1.31	2.50x2.12	ar	Zen	1½	830	25	25	49½		16
	N		HG	Al		1.12x3.25	4		8		1045:	N	2.00x1.50	7	2.50x1.31	2.50x2.12	ar	Str	1¾	860	25	25	49½		17
48½	N		HG	CI	61¾	1.25x2.50	4	1045	6¾	31½	1045		2.00x1.37	3	2.25x1.43	2.25x1.43	abceg	MaS	1		18	27½	30½		18
45	E	CA	HG	CI	109	1.50x4.37	4	1040	12½	145	1045	N	2.75x2.50	3	3.00x2.81	3.00x3.75	abcde	MaS	1¼	1200	24¼	44	44¼		19
45	E	CA	HG	CI	109	1.50x4.37	4	1040	12½	145	1045	N	2.75x2.50	3	3.00x2.81	3.00x3.75	abcde	MaS	1¼	1200	24¼	44	44¼		20
44½	N		HG	CI	61¾	1.25x2.50	4	1045	6¾	31½	1045		2.00x1.37	4	2.25x1.43	2.25x1.43	abceg	MaS	1	802	18	29½	30½		21
44½	N	CA	HG	CI	72	1.25x2.75	4	1045	6¾	40	1045	N	2.25x1.37	4	2.62x1.87	2.62x1.75	abceg	MaS	1	864	18	31¾	41½		22
(h)	N		Ch	Al	25⅞	.875x3.01	3	DFS	7½	35	SF	Y	2.25x1.31	4	2.75x1.59	2.75x2.06	abcder	Zen	1⅝		25	26	51		23
(h)	N		Ch	Al	25⅞	.875x3.01	3	DFS	9¼	39	SF	Y	2.25x1.37	9	2.75x1.34	2.75x2.09	abcder	Str	2		27	29	59		24
45	E		Ch	Al	26	.983x3.03	4	1038	10½	50	5046	Y	2.19x1.50	7	2.62x1.94	2.62x2.47	abcde	Zen	1¼	763*	19¼	30¼	36¾		25
45	E		Ch	Al	26	.983x3.03	4	1038	10½	50	5046	Y	2.19x1.50	7	2.62x1.94	2.62x2.47	abcde	Zen	1½	780*	19¼	30½	36¾		26
45	E		Ch	Al	29	.983x3.13	4	1038	10½	50	5046	Y	2.19x1.50	7	2.62x1.94	2.62x2.47	abcde	Zen	1½	785*	19¼	30½	36¾		27
30			HG	CI	29	.750x2.81	3	3140	6⅞	21	1045	N	1.75x1.12	3	2.00x1.56	2.00x1.62	abr	Zen	1¼	410*	15½	21¾	32½	6	28
30			HG	Al		.750x2.81	3	AS	6¾	21	1045	N	1.75x1.12	3	2.00x1.56	2.00x1.62	abr	Zen	1¼	410*	15½	21¾	32½	6	29
30			HG	Al		.875x2.90	4	CS	7	26	CS	N	2.00x1.25		2.50x1.31	2.50x1.93	abr	Zen	1½	675*	21	23¼	41½	4	30
45			HG	Al	40	1.00x3.51	4	1035	8	37	1045	N	2.00x1.50	7	2.50x1.31	2.50x2.12	abr	Zen	1¾	860*	21	26½	49¾	4	31
30			HG	Al	49	1.12x3.44	4	AS	8	39.2	CS	Y	2.00x1.50	4	2.50x1.31	2.50x2.12	abr	Zen	1¾	860*	21	26½	49¾	4	32
45	E	Tun	HG	Al	49	1.25x3.68	4	AS	10⅞	70	NS	Y	2.75x2.25	4	3.25x2.25	3.25x2.25	abc	Hol	2	1050*	27¾	32½	56¾		33
45	E	Tun	HG	Al	49	1.25x3.68	4	AS	10⅞	70	NS	Y	2.75x2.25	4	3.25x2.25	3.25x2.25	abc	Str	2	1150*	29¾	29½	56¾		34
45			HG	Al	50	1.37x3.84	4	AS	11¼	84	NS	Y	2.87x2.00	4	3.00x3.00	3.00x3.62	ab	Zen	2	1325*	33¼	33½	66		35
45			HG	Al	56	1.37x4.00	4	AS	11¼	84	NS	Y	2.87x2.00	4	3.00x3.00	3.00x3.62	ab	Hol	2	1325*	33¼	33½	66		36
45			HG	Al	56	1.37x4.00	4	AS	11¼	85	CS	Y	2.87x2.25	4	3.00x3.00	3.00x3.62	abr	Zen(2)	2	1325*	25	33½	66		37
45	Bo	Tun	HG	CAS		.750x2.84	3	DFS	7	18	CAS	Y	2.14x1.75	3	2.50x1.37	2.00x1.96	abc	Hol	1	700*	23½	32½	43½		38
45			HG	Al	49	1.25x3.68	4	AS	10⅞	164‡	NS	Y	2.75x2.25	4	3.25x2.25	3.25x2.25	abc	Hol	2	1700*	33¼	30½	88½		39
45			HG	Al	49	1.25x3.68	4	AS	10⅞	164‡	NS	Y	2.75x2.25	4	3.25x2.25	3.25x2.25	abc	Str(2)	2	1700*	33¼	30½	88½		40
45			HG	Al	49	1.25x3.68	4	AS	10⅞	164‡	NS	Y	2.75x2.25	4	3.25x2.25	3.25x2.25	abc	Str(2)	2	1700*	33¼	30½	58½		41
45	E	T-12	Ch	Al	328	2.00x7.00	4	CS	18	416	CNS	Y	4.00x3.12	9	4.00x3.37	4.00x5.50	abcdef	Zen(4)	2½	7500	45	64½	100⅞		42
45	E	T-12	Ch	Al	328	2.00x7.00	4	CS	18	416	CNS	Y	4.00x3.12	9	4.00x3.37	4.00x5.50	abcdef	Zen(4)	2½	7500	45	64½	100⅞		43
45	E	T-12	Ch	Al	328	2.00x7.00	4	CS	18	416	CNS	Y	4.00x3.12	9	4.00x3.37	4.00x5.50	abcdef	Zen(4)	2½	9900	44½	61½	142⅝		44
45	E	T-12	Ch	Al	328	2.00x7.00	4	CS	18	416	CNS	Y	4.00x3.12	9	4.00x3.37	4.00x5.50	abcdef	Zen(4)	2½	9000	45	64½	121⅝		45
45	E	T-12	Ch	Al	328	2.00x7.00	4	CS	18	416	CNS	Y	4.00x3.12	9	4.00x3.37	4.00x5.50	abcdef	Zen(4)	2½	9000	45	64½	121⅝		46
45	N		HG	CIA	64	1.10x3.25	3	1045	8½	43	1045	N	1.50x2.12	2	1.50x3.00	1.50x3.00	Splash	Str	1	415	19½	22½	36¾		47
45	N		HG	Al	8	.625x2.12	3	1045	6	14	1045	N	1.58x1.25	2	ND3207	ND3207	ace	Str	¾	240	18¼	19½	27½		48
45	N		HG	CIA	19	.625x2.40	3	1045	8	27	1045	N	1.75x1.50	2	1.76x2.81	1.73x2.87	abe	Str	¾	330	15¾	21½	38¼		49
45	E	CA	HG	CI	30	.875x2.75	3	1045	7¼	29	1045	N	1.75x1.25	3	2.12x1.43	2.12x1.18	abcde	Str	1	490	21⅜	24½	35		50
45	E	CA	HG	CI	45	1.12x3.06	4	1045	8¾	46	1045	N	2.00x1.50	3	2.00x2.50	2.00x1.87	abcde	Str	1	610	19¼	28½	41	5	51
45	N		HG	CIA	64	1.10x3.25	3	1045	8½	43	1045	N	1.50x2.12	3	1.50x3.00	1.50x3.00	abe	Str	1	630	20¼	22½	48⅝		52
45	N		HG	CIA	89	1.10x3.56	4	1045	10⅝	66	1045	N	2.00x2.25	3	2.00x4.18	2.00x3.50	abe	Str	1½	830	20¼	26½	54⅝		53
45	N		HG	CIA	89	1.10x3.93	4	1045	10⅝	66	1046	N	2.00x2.25	3	2.00x4.18	2.00x3.50	abe	Str	1½	830	20¼	26½	54⅝		54
45	N		HG	CIA	82	1.25x3.87	4	1045	11⅝	87	1045	N	2.56x2.25	5	2.56x4.25	2.56x4.25	abce	Str	1½	1175	22¾	27½	59¼		55
45	N		HG	CIA	126	1.43x4.68	4	1045	13¼	168	1045	N	2.56x3.00	5	2.62x4.50	2.62x4.50	abcde	Str	2	1720	25½	37⅝	74½		56
45	N		HG	CIA	150	1.43x5.25	4	1045	13¼	168	1045	N	2.56x3.00	5	2.62x4.50	2.62x4.50	abcde	Str	2	1730	25½	37⅝	74½		57
45	N		HG	CIA	190	1.43x5.50	4	1045	13¼	168	1045	N	2.56x3.00	5	2.62x4.50	2.62x4.50	abcde	Str	2	1740	25½	37⅝	74½		58
45	E	CA	HG	Al	48	1.00x3.85	4	1045	8	40	1045	N	2.00x1.50	7	2.62x2.00	2.62x1.25	abcde	Str	1¼	1016	22½	28½	53¼		59
45	E	CA	HG	Al	48	1.00x4.00	4	1045	8¾	48	1045	N	2.25x1.50	7	2.62x2.75	2.62x1.62	abcde	Str	1¼	1185	20½	27½	57¼		60
45	N		HG	CIA	82	1.25x3.87	4	1045	11⅝	87	1045	N	2.56x2.25	7	2.56x4.25	2.56x4.25	abce	Str	1½	1475	23⅜	33¼	72⅛		61
45	N		HG	CIA	106	1.25x4.31	4	1045	11⅝	87	1045	N	2.56x2.25	7	2.56x4.25	2.56x4.25	abce	Str	2	1565	24¼	33¼	72⅛		62
45	N		HG	CIA	126	1.43x4.68	4	1045	13¼	168	1045	N	2.56x3.00	7	2.62x4.50	2.62x4.50	abcde	Str	2	2330	27½	37⅝	91⅜		63
45	N		HG	CIA	150	1.43x5.25	4	1045	13¼	168	1045	N	2.56x3.00	7	2.62x4.50	2.62x4.50	abcde	Str	2	2360	27½	37⅝	91⅜		64
45	N		HG	CIA	190	1.43x5.50	4	1045	13¼	168	1045	N	2.56x3.00	7	2.62x4.50	2.62x4.50	abcde	Str	2	2380	27½	37⅝	91⅜		65
45	N		Ch	Al	52½	1.25x3.62	4	4340	8⅝	68	Spec:	Y	2.49x1.68	7	2.62x1.81	2.62x1.81	ab			950	42¼	29¼	48	3	66
45	N		HG	CI		1.00x3.75	3	Al	8½		CS	Y	2.00x2.00	2	2.00x2.00	2.00x2.00	Splash	Zen	⅞	200	15½	24⅜	17⅝		67
45	N		HG	Al	15	.750x2.56	4	CS	7¼	26	CS	Y	1.75x1.37	2	1.75x1.87	1.75x2.00	abce	Zen	⅞	300	20½	22⅝	28⅛		68
45	N		HG	Al		.688x2.16	3	CS	6		CS	Y	1.56x1.23	2	1.99x1.62	1.99x1.25	abcer	Zen	⅞	280	17¼	19	26⅜		69
45	N		HG	Al	18	.625x2.44	3	CS	7½	22	CS	N	1.50x1.75	2	1.50x2.75	1.50x2.75	abce	Zen	1	347	17½	21½	34⅛		70
45	N		HG	Al	15	.750x2.56	4	Al	7½	18	CS	Y	1.75x1.37	4	1.75x2.37	1.75x2.37	abce	Zen	1	407	19½	22½	34⅛		71
45	N		HG	Al	20	.875x2.75	4	Al	8½	30	CS	N	2.00x1.75	3	2.00x2.50	2.00x2.50	abc	Zen	1¼	524	18¼	28½	39⅛		72
45	N		HG	Al	15	.750x2.56	4	Al	7¼	18	CS	Y	1.75x1.37	4	1.75x2.50	1.75x2.00	abce	Zen	1¼	529	24	20⅜	43⅞		73
45	N		HG	Al	28	.875x3.00	4	Al	8½	28	CS	N	2.00x1.75	7	2.00x3.00	2.00x1.75	abce	Str	1½	765	20½	26⅜	49½		74
45	N		HG	Al	28	.875x3.00	4	Al	8½	28	CS	N	2.00x1.75	7	2.00x3.00	2.00x1.75	abce	Str	1¾	810	22½	26⅜	49½		75
45	N		HG	Al	28	.875x3.00	4	Al	8½	28	CS	N	2.00x1.75	9	2.00x3.00	2.00x1.75	abce	Str	1¾	1067	21⅞	26½	62⅝		76
45	N		HG	Al	28	.875x3.00	4	Al	8½	28	CS	N	2.00x1.75	9	2.00x3.00	2.00x1.75	abce	Str(2)	1½	1140	22¾	26½	62⅝		77
(h)	Y	•		4145	67	1.44x2.21	5	6415	10	::	6415	Y	3.00x2.37	7	3.75x1.31	3.75x1.31	abc	Str		2475	45⅛	58⅞	98		78
45	N		HG	Al	8	.625x2.12	4	1045	6	14	1045	N	1.56x1.25	2	ND1207	ND1207	ac	Op	⅝	143	14½	20½	21½	6	79
45	E	CA	HG	CI	30	.875x2.75	4	1045	7¼	29	1045	N	1.75x1.06	3	2.12x1.18	2.12x1.43	abcde	Op	1	290	19	26⅜	27¾	4(T)	80
45	E	CA	HG	CI	45	1.12x3.03	4	1045	8¾	46	1045	N	2.00x1.50	3	2.00x1.87	2.00x2.50	abcde	Op	1	385	17⅞	27	32⅞	5	81

For abbreviations see pages 158 and 159

For page on which Directory of Manufacturers appears, see Table of Contents page 65

Line Number	ENGINE MAKE AND MODEL	Designed for	Number of Cylinders, Bore and Stroke (In.)	MAXIMUM BRAKE Hp. at Specified R.P.M. With Bare Engine	MAXIMUM BRAKE Hp. at Specified R.P.M. With Standard Accessories	Piston Displacement (Cu. In.)	Compression Ratio	Maximum Torque at R.P.M. (Lb. Ft.) with or without Accessories	Cylinder Liners - Type	Crankcase - Upper Half Integral with Cylinders	VALVES: Arrangement	VALVES: Exhaust Head Material S.A.E. No.)	VALVES: Max. Head Diameter (In.) Intake	VALVES: Max. Head Diameter (In.) Exhaust	VALVES: Min. Port Diameter (In.) Intake	VALVES: Min. Port Diameter (In.) Exhaust	VALVES: Lift In. Intake	VALVES: Lift In. Exhaust	VALVES: Stem Diameter (In.) Intake	VALVES: Stem Diameter (In.) Exhaust
1	Waukesha, Cont. 190GL	T.Tr.Ind	6 3⅝x4	61 1800	61 1800	265.0	6.70	210 900	BE	W	In	L	Sil	1.40	1.28	1.25	1.12	.359	.375	.375	.375
2	(11) 88Z	T,B,Ind	8 4x4½	105 3000	89 3000	320.0	5.75	235 1000	BE	N	In	L	Sil	1.68	1.43	1.50	1.25	.375	.375	.375	.375
3	(11) 140-GK	T,B,Ind	6 4⅛x5½	142 2250	127 2250	525.0	6.00	425 1000	BE	W	In	L	Sil	2.12	1.56	1.87	1.37	.531	.434	.434	.434
4	(11) 6SRKR	T,B,Ind	6 4⅝x5½	126 2250	109 2250	517.0	5.50	369 600	BE	N	Se	L	Sil	2.16	1.65	1.87	1.37	.386	.375	.375	.375
5	(11) 145-GK	T,B,Ind	6 5¼x6	186-2000	172-2000	779.0	6.20	590-1200	BE	W	In	I	Sil	2.37	1.84	2.12	1.62	.594	.531	.500	.500
6	12) 6WAK	T,B,Ind	6 5¼x6	235-1800	193 1300	1197.0	5.20	865-900	BE	W	In	I	Sil	2.65	2.22	2.37	2.00	.656	.656	.500	.500
7	(12) 6NK	Ind	6 7x8	221-1050	200 950	1962.0	5.50	1330-600	BE	W	In	I	Sil	2.84	2.53	2.50	2.25	.718	.718	.562	.562
8	12) 6LRO	Ind	6 8⅛x6½	430 1050	374 900	2894.0	6.60	2260 800	BE	W	Se	I	Sil	3.50	3.00	3.25	2.75	.750	.840	.562	.562
9	11) 145GZ	T,B,Tr,Ind	6 5½x6	220-2000	206 2000	817.0	6.00	615-1200	BE	W	In	I	Sil	2.37	1.84	2.12	1.62	.594	.531	.497	.498
10	6MZA	T,B,Ind	6 4⅛x4⅝	129-2800	113-2800	404.0	5.90	290 1000	BE	N	In	L	Sil	1.93	1.68			.375	.375	.375	.375
11	** 11) 140GK	T,B,Tr,Ind	6 4⅛x5½	170-2800	159 2600	525.0	6.40	435 800	BE	W	In	I	Sil	2.12	1.56	1.87	1.37	.540	.540	.437	.437
12	** 11) 140GZ	T,B,Tr,Ind	6 4⅛x5½	188-2600	171 2600	554.0	6.40	460 800	BE	W	In	I	Sil	2.12	1.56	1.87	1.37	.540	.540	.437	.437
13	** 11) 145GK	T,B,Tr,Ind	6 5¼x6	225 2400	207 2400	779.0	6.20	595-1400	BE	W	In	I	Sil	2.56	2.03	2.31	1.81	.600	.600	.500	.500
14	White 110A	T	6 3⅛x4½	100 3000		270.0	6.21	200 1200	BE	N	In	L	CNS	1.65	1.63	1.43	1.49	.381	.381	.373	.373
15	116A	T	6 3⅛x4½	110 2800		290.0	6.68	230-1200	BE	N	In	L	CNS	1.97	1.63	1.75	1.49	.381	.381	.373	.373
16	120A	T	6 3⅛x4½	114 2800		316.0	6.50	250 1200	BE	N	In	L	Sil (x)	1.97	1.63	1.75	1.49	.381	.381	.373	.432
17	130A	T	6 4x4	120 3000		340.0	6.60	270 1200	BE	N	In	L	Sil (x)	1.97	1.63	1.75	1.49	.381	.381	.373	.432
18	140A	T	6 3⅞x5½	125 3000		362.0	6.03	285 1400	BE	N	In	L	Sil (x)	1.97	1.63	1.75	1.49	.381	.381	.373	.432
19	150A	T	6 4x5½	135 3000		386.0	6.45	315 1300	BE		In	L	Sil (x)	1.97	1.63	1.75	1.49	.381	.381	.373	.432
20	260A	T	6 4⅜x5	170 2800		451.0	6.25	350 1200	BE	N	In	L	Sil (x)	2.35	1.88	1.99	1.75	.423	.423	.434	.432
21	280A	T	6 4½x5	184 2800		504.0	6.00	405 1200	BE	N	In	L	Sil (x)	2.35	1.88	1.99	1.75	.423	.434	.434	.432
22	280TA	B	6 4½x5	175 2800		504.0	6.00	400 1200	BE	N	In	L	Sil (x)	2.35	1.88	1.99	1.75	.423	.423	.434	.432
23	24AK	B	12 4¼x4½	210 2800		681.0	6.00	500 1200	BE	D	In	L	Sil (x)	1.85	1.76	1.62	1.62	.381	.381	.401	.432
24	Willys 4-63	C.T	4 3½x4⅝	63 4000		134.2	6.48	105 2000	BE	N	In	L	CHS	1.53	1.48	1.34	1.28	.359	.359	.373	.373
25	6-63	C	6 3x3⅛	72 4000		148.4	6.42	117 4000	BE	N	In	L	(14)	1.37	1.28	1.12	1.12	.284	.300	.340	.340
26	Wisconsin TE	Tr.Ind	2 3x3½	11.2 2600	11.2 2600	45.9	4.60	27 1600	EA	N	Se	L	Aus	1.31	1.31	1.12	1.12	.275	.275	.309	.309
27	TF	Tr.Ind	2 3½x3½	13.3 2600	13.3 2600	53.9	4.60	32.5 1600	EA	N	Se	L	Aus	1.31	1.31	1.12	1.12	.275	.275	.309	.309
28	VE-4	Tr.Ind	4 3x3½	22 2600	22 2600	91.9	4.60	50 1600	EA	N	Se	L	Aus	1.31	1.31	1.12	1.12	.275	.275	.309	.309
29	VF-4	Tr.Ind	4 3½x3½	29 2400	25 2400	107.7	4.60	57 1600	EA	N	Se	L	Aus	1.31	1.31	1.12	1.12	.275	.275	.309	.309
30	VP-4	Tr.Ind	4 3x4	31 2200	31 2200	154.0	4.60	88 1400	EA	N	Se	L	Aus	1.56	1.56	1.37	1.37	.275	.275	.309	.309

For other engines see SMALL GASOLINE POWER UNITS table

ABBREVIATIONS

- ‡—Stellite faced.
- *—Weight complete with ignition and carburetor.
- **—Pressure also to Camshaft thrust bearing.
- ‡‡—As mounted in chassis on tilt.
- ‡‡‡—Also available in reduction gear models.
- ‡‡‡‡—Also available with a maximum B.H.P. of 225 at 3400 R.P.M. in Model FM225; other specifications the same.
- °—Also available in R.H. rotation.
- °°—High output.
- 3—Tocco hardened.
- 11—Forked 23.7 oz.—Blade 22.4 oz.
- ♣—Weight per pair.
- §—4 Rings used on Trucks and 5 on Coaches.
- ‘—Rated with generator and water pump, but no fan or muffler.
- ‘—With No. 2 adapter.
- ▲—500 for gasoline; 630 for natural gas or butane.
- ●—Special.
- ●●—Two rods used. 1 clamped tight weighing 305 oz., and 1 loose outside of bearing weighing 240 oz.
- ▫—Dia.
- ▫▫—Cast Iron 315, Aluminum 250 lbs.
- ▫▫▫—Supercharged engine.
- ▫▫▫▫—⅝ in. for link rod; 12 in. for master rod.
- 2—Two used.
- 3—Three used.
- 4—Four used.
- 7—Roller Bearings.
- 8—Minneapolis Moline Power Implement Co.
- 9—Ball Bearings.
- (11)—Automotive Power Ratings.
- (12)—Industrial Power Ratings.
- (13)—Aircooled Motors Corp.
- (14)—Unisay Type 307 Head, 3140 steel stem.
- a—Main Bearings.
- (aa)—AISI-8640-H.
- AC—Aluminum or Cast Iron.
- ACI—Alloy Cast Iron.
- Al—Aluminum Alloy.
- Ala—Aluminum Alloy, Anodized.
- Alb—Aluminum Alloy with Steel Strut.
- Alst—Aluminum Alloy with Steel Strut, Tin plated.
- Alt—Aluminum Alloy (Tin coated).
- AS—Alloy Steel.
- Aus—Austenite Steel.
- Ay—Alloy Iron.
- B—Brass.
- b—Connecting Rods.
- bb—C1045GFQ.
- BE—Bare Engine.
- BG—Bevel Gear.
- Bf—107-Blade, 133 Fork.
- Bo—Used in both Intake and Exhaust seats.
- C—Cam.
- c—Camshaft Bearings.
- CA—Cast Alloy.
- Car—Carter Carburetor.
- CAS—Cast Alloy Steel.
- Ch—Chain.
- CHS—Chrome Nickel Silicon Steel.
- CI—Cast Iron.
- CIA—Cast Iron, Anodized.
- CMS—Carbon Manganese Steel.
- CMT—Chromium Tungsten Steel.
- CNI—Chrome Nickel Iron.
- CNS—Chrome Nickel Steel.
- COE—Cab over engine.

For page on which Directory of Manufacturers appears, see Table of Contents page 65

PERFORMANCE FACTOR

Derivation of the Performance Factor shown in the 1949 pasenger car specifications on page 122 of this issue.

For some time we have been printing performance factors of passenger cars in our specifications. These factors are obtained by means of the equation,

$$P.F. = \frac{3825\ Dr}{Wd} \text{ cu. in. per ton foot.}$$

and a number of inquiries have been received as to how this equation is derived.

The performance factor represents the number of cubic inches the pistons of the engine displace while under gas pressure. If the piston displacement of the engine is represented by D, it is evident that the displacement under gas pressure is D/2 per crankshaft revolution, as each piston is under gas pressure only once in two revolutions. This displacement (that is, D/2) must evidently be divided by the weight of the loaded vehicle in tons and by the distance in feet the car travels during one revolution of the crankshaft. As to the weight, it is our custom to add 500 lb. to the shipping weight, for occupants and supplies. The weight W being given in pounds, the weight in tons is evidently W/2000.

While the crankshaft makes one revolution, the driving wheels make 1/r revolution, r being the rear-axle ratio. This assumes that the car is being driven in direct-drive, to which condition the performance factor as given applies. If the effective diameter of the driving wheels is d in., then the car travel per wheel revolution is 3.14 d/12 ft. and the car travel per crankshaft revolution (3.14 d)/(12 r). Therefore, the cu. in. displaced by the pistons under gas pressure, per ton moved, per foot traveled is

$$\frac{\frac{D}{2}}{\frac{W}{2000} \times \frac{3.14\,d}{12\,r}} = \frac{3825\ Dr}{Wd}$$

ENGINES—*Concluded*

VALVES				PISTONS			CONNECTING RODS			CRANKSHAFT							CARBU-RETOR		OVERALL DIMENSIONS (In.)				
Seats													MAIN BEARINGS										
Angle, Deg.	Inserts Used?	Insert Material (S.A.E. No.)	Camshaft Drive	Material	Weight with Pins, Rings, Bushings (Oz.)	Piston Pin—Diameter and Length (In.)	Number of Rings per Piston	Material	Center to Center Length (In.)	Weight with Bushing and Cap (Oz.)	Material	Counter Balance Used	Crank-Pin Diameter and Length (In.)	Number	Diameter and Length (In.) Front	Diameter and Length (In.) Rear	Oil Pressure to	Make	Size	Engine Weight without Carburetor or Ignition (Lb.)	Width	Height	Length	Clutch Housing (S.A.E. No.)	Line Number
44½	N		HG	CI		1.25x3.00	4	1045	8¾	...	1045	N	2.25x1.37	4	2.62x1.75	2.62x1.75	abcdeg	Op	1½		22	29⅛	42⅝	3	1
45	E	CA	HG	Al	46	1.00x3.85	4	1045	8	40	1045	N	2.00x1.50	7	2.62x1.25	2.62x2.00	abcde	Op	1½	705	19⅛	31	39½	3	2
(h)	E	CA	HG	Al	64	1.37x3.87	4	1045	10¼	85	1045	N	2.62x2.00	7	3.25x1.75	3.25x3.00	abcdeg	Op	1¾	1390	23⅛	41½	53⅛	3	3
30	E	CA	HG	Al	70	1.37x4.25	4	1045	10¼	83	1045	N	2.75x1.75	7	3.00x1.87	3.00x3.00	abcde	Op	2	1225	24⅛	39⅛	46⅞	3	4
(h)	E	CA	HG	Al	103	1.62x4.87	4	1045	11¾	133	1045	N	3.00x2.25	7	3.50x2.00	3.50x3.50	abcdeg	Op	2	1810	25⅛	46⅛	55½	2	5
(h)	E	CA	HG	Al	103	1.62x4.87	4	1045	11¾	133	1045	N	3.00x2.25	7	3.50x2.00	3.50x3.50	abcdeg	Op	2½	3050	30⅛	53⅛	65⅛	0	6
(h)	E	CA	HG	CI	292	1.87x5.50	4	1045	13¼	195	1045	N	3.37x2.37	7	4.00x2.56	4.00x3.56	abcdeg	Op	2½	5900	31½	61½	76⅛	00	7
(h)	E	CA	HG	CI	304	2.00x6.00	4	1045	15¾	314	1045	N	3.25x2.75	7	3.75x3.75	3.75x5.50	abcdeg	Op	2½	9200	48½	65	95⅛	00	8
30	E	CA	HG	CI	776	2.25x7.75	5	1045	18¾	474	1045	N	4.00x3.75	7	4.25x4.81	4.25x5.50	abcdeg	Op(2)	2½	9200	48½	65	95⅛	00	8
(h)	E	TS	HG	Al	110	1.62x4.50	4	1045	11¾	133	1045	N	3.00x2.25	7	3.50x2.00	3.50x5.50	abcdeg	Op	1¾	1810	25⅛	48⅝	55½	2	9
45	E	CA	HG	Al	45	1.00x4.00	4	1045	8¾	48	1045	N	2.25x1.50	7	2.62x1.62	2.62x2.75	abcde	Op	1⅝	920	20⅞	31⅝	43½	3	10
(h)	E	TS	HG	Al	64	1.37x3.87	4	1045	10¼	85	C1046	Y	2.62x2.09	7	3.25x1.59	3.25x3.00	abcdeg	Op	1¾	1393	23⅛	41½	53⅛	3	11
(h)	E	TS	HG	Al	67	1.37x3.87	4	1045	10¼	85	C1046	Y	2.62x2.03	7	3.25x1.59	3.25x3.00	abcdeg	Op	1¾	1390	23⅛	41½	53⅛	3	12
(h)	E	TS	...	Al	103	1.62x4.50	4	1045	11¾	...	C1046	Y	3.00x2.25	7	3.50x2.00	3.50x3.50	abcdeg	Op	2	1810	25⅛	48⅛	57⅛	2	13
45	E	St	HG	Al	39	1.00x3.03	3	1040	9⅛	52	1050†	Y	2.18x1.34	7	3.00x1.81	3.00x1.93	abcde	Str	1¼	1075	29⅝	40⅝	44⅛	3	14
45	E	St	HG	Al	39	1.18x3.31	3	1040	9⅛	56	1050†	Y	2.18x1.34	7	3.00x1.81	3.00x1.93	abcde	Str	1¼	1075	29⅝	40⅝	44⅛	3	15
45	E	St	HG	Al	41	1.00x3.46	3	1040	9⅛	52	1050†	Y	2.18x1.34	7	3.00x1.81	3.00x1.93	abcdef	Str	1¼	1070	29⅝	40⅝	44⅛	3	16
45	E	St	HG	Al	44	1.18x3.62	3	1040	9⅛	56	1050†	Y	2.18x1.31	7	3.00x1.81	3.00x1.93	abcdef	Str	1¼	1075	29⅝	40⅝	44⅛	3	17
45	E	St	HG	Al	41	1.00x3.46	3	1040	9⅛	52	1050†	Y	2.18x1.34	7	3.00x1.81	3.00x1.93	abcdef	Str	1¼	1070	29⅝	40⅝	44⅛	3	18
45	E	St	HG	Al	44	1.18x3.62	3	1040	9⅛	56	1050†	Y	2.18x1.34	7	3.00x1.81	3.00x1.93	abcdef	Hol	1¼	1070	29⅝	40⅝	44⅛	3	19
45	E	St	HG	Al	44	1.18x3.62	3	1040	9⅛	52	1050†	Y	2.18x1.34	7	3.00x1.81	3.00x1.93	abcdef	Hol	1¼	1409*	34	37	51	2	20
45	E	Spec	HG	Al	54	1.24x3.93	4	3130	9¼	75	1050	Y	2.50x2.06	7	3.25x1.69	3.25x2.00	abcdeos	Hol	1½	1442*	34	37	51	2	21
45	E	Spec	HG	Al	62	1.24x3.93	4	3130	9¼	75	1050	Y	2.50x2.05	7	3.25x1.68	3.25x2.00	abcdeos	Hol	1½	1721	55	20	61	1	22
45	E	St	HG	Al	62	1.24x3.75	3	3130	9¼	79	1050†	Y	2.50x1.91	7	3.25x1.69	3.25x2.00	abcdef	Zen‡	1½	1721	55	20	61	1	22
(h)	E	St	HG	Al	44	1.18x3.62	3	1040	8⅞	53	1060†	Y	2.43x2.31	7	2.87x2.09	2.87x2.40	abcdef	Zen*	1⅝	2090	65	21	70	1	23
45	N	N	HG	Al	18.5	.812x2.78	3	1035	9⅛	34	1040	Y	1.93x1.30	3	2.33x1.92	2.33x1.75	abce	ZC	1¼	344	19	28⅛	28¼	...	24
45	N	...	HG	Alt	15.4	.749x2.53	3	C1141	6½	22	C1040	...	...	4	2.25x1.30	2.25x1.60	abce	ZC	1⅛	384	21	28⅞	31	...	25
45	Y	MI	HG	Al	16	.750x2.56	4	1035	8¾	22	1045	Y	1.75x1.12	2	Timken	Timken	PS	Zen	⅝	220*	18⅞	22½	22⅝	...	26
45	Y	MI	HG	Al	18¼	.750x2.56	4	1035	8¾	22	1045	Y	1.75x1.12	2	Timken	Timken	PS	Zen	⅝	220*	18⅞	22½	22⅝	...	27
45	Bo	MI	HG	Al	16	.750x2.56	4	1035	8¾	22	1045	N	1.75x1.12	2	Timken	Timken	PS	Zen	⅝	285*	21½	25½	25⅛	...	28
45	Bo	MI	HG	Al	18.2	.750x2.56	4	1035	8¾	22	1045	N	1.75x1.12	2	Timken	Timken	PS	Zen	⅝	285*	21½	25½	25⅛	...	29
45	Bo	MI	HG	Al	28	.937x2.75	4	1035	8¾	28	1045	N	1.75x1.25	2	Timken	Timken	PS	Zen	1	418*	24	28¾	28½	...	30

For other engines see SMALL GASOLINE POWER UNITS table

ABBREVIATIONS—Cont.

CS—Carbon Steel.
D—Dry Liners.
d—Wrist Pins.
DC—Durachrome Castings.
DFS—Drop Forged Steel.
Dia—Diachrome.
Dur—Duralumin.
e—Timing Gears or Chain.
E—Used on Exhaust valve seats.
EA—Engine with Standard Accessories.
Ens—Ensign.
f—Accessories drive.
FA—Fire Apparatus.
g—Rocker Arms and Shafts.
(h)—Intake 30°, Exhaust 45°.
H—Horizontal Motor.
HC—Helical Gear and Chain.
HFA—Hard Facing Alloy.
HG—Helical Gear.
Hh—Horizontal in Head (Valve).
Hol—Holley Carburetor.
I—In Head (Valves).
In—Integral.
Ind—Industrial.
(k)—Intake 70°, Exhaust 44°.
L—Valves at Side (L-Head).
(m)—Intake 45°, Exhaust 46°.
M—Marine.
MaS—Marvel-Schebler Carburetor Div.
MI—Moly Iron.
ML—Mechanical Lubricator System.
Mo—Molybdenum.
MS—Manganese Steel.
n—Intake 15°, Exhaust 44°.
N—No or none.
NCI—Nickel Cast Iron.
Nif—Nifferrite.
Str—Ni-Resist.
NS—Nickel Steel.
Oh—Overhead Valves.
Op—Optional.
PS—Pump Splash system.
p—Hydraulic Valve Lifters and Cylinder Walls.
r—Reverse Gear.
s—Fan Drive Gears.
SA—Special Alloy.
SB—Spiral Bevel Gear.
Se—Separate.
SG—Spur Gear.
SF—Steel Forging.
Sil—Silechrome Steel.
Spec—Special.
SS—Semi-Steel.
St—Stellite Steel.
Ste—Steel.
Str—Stromberg Carburetor.
t—Tappets and Valve Mechanism.
T-12—Thompson Products No. 12
T—Valve Opposite (T-Head).
T—Trucks.
TA—Tungsten Alloy.
Tr—Tractors.
TS—Tool Steel.
Tun—Tungsten Steel.
W—Wet Liners.
WM—Wausau Cast Moly No. 1.
WR—Wilcox-Rich-EA5.
(x)—Sodium Cooled.
x—Complete with SAE housing.
y—With reverse gear. **Y**—Yes.
(z)—Intake 30°, Exhaust 29°.
Zen—Zenith Carburetor.
ZC—Zenith or Carter.

For page on which Directory of Manufacturers appears, see Table of Contents page 65

Tire Shipments, Production and Inventory, 1940-1948*

PASSENGER CAR CASINGS

	1948	1947	1946	1945	1944	1941	1940
Original Equipment	21,582,372	19,644,143	11,068,542	1,115,295	208,086	19,855,693	19,560,272
Replacement	41,275,088	52,857,228	54,684,036	25,462,305	18,329,918	34,118,268	30,902,707
Export	659,082	1,608,082	652,643	222,375	130,032	586,423	411,099
Total Shipments	63,516,542	74,109,453	66,423,221	26,799,975	18,668,036	54,560,384	50,874,078
Production	66,780,127	77,795,299	66,466,319	28,199,792	18,818,738	50,391,918	50,965,429
Inventory—Year-End	8,788,907	5,444,071	1,763,472	2,214,517	1,217,615	3,165,132	7,270,192

TRUCK AND BUS CASINGS

Original Equipment	5,257,788	5,411,521	4,223,610	4,868,993	6,446,428	4,924,615	2,692,597
Replacement	7,851,156	10,013,994	10,806,211	11,016,111	8,108,959	5,776,145	4,442,949
Export	1,149,196	1,648,396	859,369	282,028	132,568	902,790	764,813
Total Shipments	14,258,140	17,073,911	15,889,190	16,167,132	14,687,955	11,603,550	7,900,359
Production	14,588,007	17,754,837	15,831,862	16,324,121	14,626,833	11,148,278	8,220,994
Inventory—Year-End	1,933,166	1,505,221	684,800	862,664	795,020	1,270,933	1,856,336

* Rubber Manufacturers Association.

AUTOMOTIVE DIESEL AND

Line Number	ENGINE MAKE AND MODEL	Built Under License from	Designed for	Type	Number of Cylinders Bore and Stroke (In.)	Cylinder Liners - Type	Cycle	Piston Displacement (Cu. In.)	With Bare Engine: Maximum Brake Hp. at Specified R.P.M.	With Standard Accessories: Max. Intermittent Hp. at Specified R.P.M.	With Standard Accessories: Continuous Sustained Hp. at Specified R.P.M.	Compression Ratio - to 1	Max. Combustion Pressure (Lb. per Sq. In.)	B.M.E.P. at Continuous Hp. (Lb. per Sq. In.)	Weight per Continuous Hp. (Lb.) ♦	Max. Torque in Lb. Ft. at Specified R.P.M.	Shipping Weight (Lb.): Automotive or Industrial	Shipping Weight (Lb.): Marine	Arrangement	Intake Port Diameter and Lift (In.)
										GENERAL										VALVES
1	Atlas Imperial 4ES253		I,M	DI	4 6 1/4 x8 1/4	W	4	1012			90 900	13.8	700	78	62.2	526 900	5600	6400	VI	2.31 - .562
2	6ES253		I,M	DI	6 6 1/4 x8 1/4	W	4	1518			135 900	13.8	700	78	56.2	789 900	7500	8260	VI	2.31 - .562
3	Buda 1BD-38	Lanova	I	AC	1 3 1/16 x4 1/2	W	4	38	8.5 2000	7 2000	6.5 1800	15.30	725	75		24.5 1400			VI	1 1/16 - .480
4	2BD-77	Lanova	M,I	AC	3 3 1/16 x4 1/2	W		77	17 2000	15.8 2000	13 1800	15.30	725	74	46.1	49 1400	600	820	VI	1 1/16 - .429
5	4BD-153	Lanova	T,Tr,M,I	AC	4 3 1/16 x4 1/2	W	4	153	39 2400	30 2400	26 2000	15.30	725	73	29.2	104 1400	760	1000	VI	1 1/16 - .429
6	4BD-182		M,T,Tr,I	DI	4 4 1/4 x4 1/2	N	4	182	46.5 2400	37 2400	29 1800	15.00	725	70		122 1400			VI	1 1/16 - .429
7	6BD-230	Lanova	T,Tr,M,I	AC	6 3 1/16 x4 1/2	W	4	230	58 2400	46 2400	40 2000	15.30	725	73	21.5	156 1400	880	1200	VI	1 1/16 - .429
8	6BD-273		M,T,I	DI	6 3 1/8 x4 1/2	N	4	273	75 2400	59 2400	44 1800	15.00	725	71		197 1300			VI	1 1/16 - .429
9	6-DT-317	Lanova	T,Tr,B,I	AC	6 3 5/8 x5 1/2	D	4	317	90 2300	75 2300	52.5 1800	14.50	725	73	21.6	185.4 1500	1133		VI	1 1/16 - .426
10	6-DTM-317	Lanova	M	AC	6 3 5/8 x5 1/2	D	4	317	90 2300	75 2100	56 1800	14.50	725	78	22.3	195 1500		1250	VI	1 1/16 - .486
11	6-DT-468	Lanova	T,Tr,B,I	AC	6 4 1/2 x5 1/2	D	4	468	113 2000	89 2000	68 1600	14.20	725	72	21.1	268.5 1100	1435		VI	1.59 - .486
12	6-DTM-468	Lanova	M	AC	6 4 1/2 x5 1/2	D	4	486	113 2000	97 1800	75 1600	14.20	725	79	23.7	306 1100		1775	VI	1.59 - .476
13	6DC-1879	Lanova	R,I	AC	6 6 1/2 x8 1/4	W	4	1879	248 1100	203 1100	155 900	13.00	725	73	44.8	1043 650	6950		VI	2.50 - .677
14	6DCM-1879	Lanova	M	AC	6 6 1/2 x8 1/4	W	4	1879	248 1100	222 1100	186 1000	13.00	725	78	34.9	1140 650		6500	VI	2.50 - .687
15	6-PH-D1879	Lanova	I	AC	6 6 1/2 x8 1/4	W	4	1879	248 1100	203 1100	155 900	13.00	725	73	58.1	1043 650	9000		VI	2.50 - .687
16	6-DC-844	Lanova	T,Tr,B,I	AC	6 5 1/2 x6 1/2	W	4	844	180 1800	150 1800	96 1200	13.00	725	75	29.8	480 1100	2850		VI	2.00 - .580
17	6-DCM-844	Lanova	M	AC	6 5 1/2 x6 1/2	W	4	844	180 1800	158 1800	112 1300	13.00	725	81	34.8	518 1100		3900	VI	2.00 - .540
18	*6-DCS-844	Lanova	T,B,Tr,I	AC	6 5 1/2 x6 1/2	W	4	844	225 1800	185 1800	140 1400		725	94		530 1250			VI	2.00 - .540
19	6-DCSM-844	Lanova	M	AC	6 5 1/2 x6 1/2	W	4	844	225 1800	195 1800	147 1400		725	99		635 1250			VI	2.00 - .540
20	8-DC-1125	Lanova	T,R,I	AC	8 5 1/2 x6 1/2	W	4	1125	239 1800	197 1800	148 1400	13.00	725	75		570 1100			VI	2.00 - .540
21	8DCM-1125	Lanova	M	AC	8 5 1/2 x6 1/2	W	4	1125	239 1800	210 1800	160 1400	13.00	725	80		695 1100			VI	2.00 - .540
22	*8DCS-1125	Lanova	T,Tr,I	AC	8 5 1/2 x6 1/2	W	4	1125	300 1800	242 1800	184 1400		725	93		700 1250			VI	2.00 - .540
23	*8DCSM-1125	Lanova	M	AC	8 5 1/2 x6 1/2	W	4	1125	300 1800	260 1800	198 1400		725	100		850 1250			VI	2.00 - .540
24	4DC-645	Lanova	I	AC	4 5 1/2 x6 1/2	W	4	645	119 1400	94 1400	71 1200		725	73		456 1000			VI	2.00 - .540
25	*6DCS-1879	Lanova	I	AC	6 6 1/2 x8 1/4	W	4	1879	330 1200	275 1200	196 900		725	92		1580 700			VI	2.50 - .647
26	*6DCSMR-1879	Lanova	M	AC	6 6 1/2 x8 1/4	W	4	1879	330 1200	275 1200	196 900		725	92		1580 700			VI	2.50 - .687
27	Caterpillar * D-311	Own	Tr,M,I	PC	4 4x5	W	4	252	152 1650	47 1650	52 1650	19.4		98	36.8	161 1290	1915	25004	VI	1 1/16 - .424
28	D-315	Own	Tr,M,I	PC	4 4 1/4 x5 1/2	W	4	350	270 1600	63 1600	57 1600	18.0		80	42.1	234 1350	2400	29304	VI	1 1/16 - .434
29	D-318	Own	Tr,M,I	PC	6 4 1/4 x5 1/2	W	4	525	402 1600	92 1600	82 1600	18.0		77	37.8	335 1240	3100	36204	VI	1 1/16 - .434
30	D-8800	Own	Tr,M,I	PC	4 5 1/2 x9	W	4	831	402 1000	92 1000	82 1000	15.7		78	53.6	561 800	4400	55304	VI	2 1/2 - .468
31	D-13000	Own	Tr,M,R,I	PC	6 5 1/2 x9	W	4	1246	450 1000	133 1000	120 1000	15.7		76	48.8	842 800	5610	74504	VI	2 1/2 - .468
32	D-17000	Own	M,I,R	PC	8 5 1/2 x9	W	4	1662	600 1000	181 1000	162 1000	15.7		77	49.4	1050 950	8000	94204	VI	2 1/2 - .468
33	Climax D-148	Own	I,M	PC	2 4 1/4 x5 1/2	W	4	149	22 1200	18 1200	18 1200	16.00	450	80	10.0	97 600	2000	2500	VI	1.75 - .422
34	D-297	Own	I,M	PC	4 4 1/4 x5 1/2	W	4	298	44 1200	36 1200	36 1200	16.00	450	80	8.0	197 600	3000	3500	VI	1.75 - .422
35	Continental CD-157	Own	I,M	TC	4 3 7/16 x4 7/8	W	4	157	37.6 2000	30 2000	25 1800	15.7		79	24.2	109 1250	605		VI	1.18 - .375
36	HD-243	Own	I	TC	4 3 5/8 x5	W		243	53.1 2000	45 2000	39.8 1800	15		79	21.1	169.5 1200	840		VI	1.37 - .325
37	HD-260	Own	I,M	TC	4 3 7/8 x5	W		260	57.2 2000	48.5 2000	41.6 1800	15		79	20.2	181 1200	840		VI	1.37 - .325
38	TD-427	Own		TC	6 4 5/8 x4 7/8	N		427	103 2000	87.2 2000	74.9 1800	14.5		79	17.4	298 1200	1300		VI	1.71 - .437
39	RD-572	Own	I,M	TC	6 4 3/4 x5 5/8	D		572	137 2000	116 2000	98.5 1800	14.5		79	19.1	400 1200	1845		VI	1.87 - .546
40	TD-6427	Own	T,B,Tr	TC	6 4 1/2 x4 7/8	N		427	112 2400		95 2400	14.5		106	13.4	300 1200	1270		VI	1.71 - .437
41	RD-6572	Own	T,B,Tr	TC	6 4 3/4 x5 5/8	D		572	150 2200		127 2200	14.5		105	14.1	400 1200	1785		VI	1.87 - .546
42	Cummins A	Own	T,B,Tr,M,R,I	DI	6-4x5	W	4	377	100 2200	85 2200	57 1600	18.00	750	75	24.2	275 1200	1830	2030	VI	1.37 - .406
43	H	Own	T,B,Tr,M,R,I	DI	6 4 1/2 x6	W	4	672	180 1800	150 1800	90 1200	17.00	750	74	32.8	540 800	1930	3315	VI	1.75 - .500
44	H	Own	T,B,Tr,M,R,I	DI	6 4 1/2 x6	W	4	672	150 1800	125 1800	93 1600	17.00	750	72	25.5	500 800	2675	3870	VI	1.75 - .500
45	*HS	Own	T,B,Tr,M,R,I	DI	6 4 1/2 x6	W	4	672	200 1800	175 1800	130 1600	14.00	925	101	19.8	625 1400	3000	4040	VI	1.75 - .500
46	NH-600	Own	T,B,Tr,M,R,I	DI	6 5 1/2 x6	W	4	743	200 2100	174 2100	130 1800	13.50		76	19.2	575 1400	2875	4500	VI	1.56 - .420
47	*NHS-600	Own	T,B,Tr,M,R,I	DI	6 5 1/2 x6	W	4	743	275 2100	240 2100	175 1800	13.50		101	16.3	710 1600	3520	4850	VI	1.56 - .420
48	HR-600	Own	T,B,Tr,M,R,I	DI	6 5 1/2 x6	W	4	743	165 1800	141 1800	106 1600	13.50		71	25.2	540 1000	2675	3720	VI	1.75 - .500
49	L-600	Own	M,R,I	DI	6 7x10	W	4	2309		250 1000	190 9000	14.00		72		1560 600		10640	VI	2.75 - .718
50	Fairbanks-Morse 48A3	Own	M,R,I	PC	1 3x4	W	4	28		4.6 1800	3.5 1800	18.00		55	94.3	18		330	390	
51	48A4-1 Cyl.	Own	R,I	PC	1 4x5	W	4	63		11 1800	8 1200	18.00		84	137.5	45		1100		
52	48A4 1/2-1 Cyl.	Own	M,R,I	PC	1 4 1/2 x5	W	4	71		12 1800	9 1200	18.00		84	122.2	53		1100		
53	48A4-2 Cyl.	Own	M,R,I	PC	2 4x5	W	4	126		23 1800	16 1200	18.00		84	84.7	96		1355	1620	
54	48A4 1/2-2 Cyl.	Own	M,R,I	PC	2 4 1/2 x5	W	4	142		25 1800	18 1200	18.00		84	75.3	108		1355	1620	
55	48A4-3 Cyl.	Own	M,R,I	PC	3 4x5	W	4	188		34 1800	25 1200	18.00		87	68.4	140		1660	1865	
56	48A4 1/2-3 Cyl.	Own	M,R,I	PC	3 4 1/2 x5	W	4	213		38 1800	28 1200	18.00		87	59.3	162		1660	1865	
57	48A4-6 Cyl.	Own	M,R,I	PC	6 4x5	W	4	377		68 1800	56 1200	18.00		87	37.5	280		2100	2385	
58	48A4 1/2-6 Cyl.	Own	M,R,I	PC	6 4 1/2 x5	W	4	426		75 1800	56 1200	18.00		87	38.0	325		2100	2385	
59	45B3 1/2-1 Cyl.	Own	I	LN	1 3 1/2 x4	W	4	31		6.5 1800	5.25 180	16.90		80	81.9	19		430		1.25
60	4) 31A6 1/2-6 Cyl.	Own	M,R,I		6 6 1/2 x9	D	2				210 720	16.90	1150	70	65.3			13710	16720	
61	General Motors 2-71	Own	T,B,Tr,I	DI	2 4 1/4 x5	D	2	142		65 2000	48 1800	16.00	1000	74	16.0	200 1200	770		VI	No Valves
62	3-71	Own	T,B,Tr,I	DI	3 4 1/4 x5	D	2	213		100 2000	72 1800	16.00	1000	74	16.0	300 1200	1175		VI	No Valves
63	4-71	Own	T,B,Tr,I	DI	4 4 1/4 x5	D	2	284		133 2000	96 1800	16.00	1000	74	14.0	400 1200	1300		VI	No Valves
64	6-71	Own	T,B,Tr,I	DI	6 4 1/4 x5	D	2	425		200 2000	145 1800	16.00	1000	74	11.0	600 1200	1655		VI	No Valves
65	Twin 4	Own	I	DI	8 4 1/4 x5	D		568		267 2000	192 1800	16.00	1000	74	26.6	1400 685Sh	5100		VI	No Valves
66	Twin 6	Own	I	DI	12 4 1/4 x5	D	2	851		400 2000	290 1800	16.00	1000	74	18.0	2100 685Sh	5200		VI	No Valves
67	Quad 6	Own	I	DI	24 4 1/4 x5	D	2	1702		800 2000	580 1800	16.00	1000	74	21.0	4200 685Sh	12180		VI	No Valves
68	2-71	Own	MW	DI	2 4 1/4 x5	D	2	142		55 2000	48 1800	16.00	980	74	27			1290	Vwg	VI No Valves
69	3-71	Own	MW	DI	3 4 1/4 x5	D	2	213		85 2000	72 1800	16.00	980	74	28			2018	Vwg	VI No Valves
70	4-71	Own	MW	DI	4 4 1/4 x5	D	2	284		113 2000	96 1800	16.00	980	74	23			2167	Vwg	VI No Valves
71	6-71	Own	MW	DI	6 4 1/4 x5	D	2	425		170 2000	145 1800	16.00	980	75	20			2645	Vwg	VI No Valves
72	Twin 6	Own	MW	DI	12 4 1/4 x5	D	2	851		340 2000	290 1800	16.00	980	75	22			6400	Vwg	VI No Valves
73	Quad 6	Own	MW	DI	24 4 1/4 x5	D	2	1702		680 2000	580 1800	16.00	980	75	24			14000	Vwg	VI No Valves
74	2-71	Own	M	DI	2 4 1/4 x5	D	2	142		65 2000	48 1800	16.00	980	74	27			1890	Vwg	VI No Valves
75	3-71	Own	M	DI	3 4 1/4 x5	D	2	213		100 2000	72 1800	16.00	1000	74	28			2018	Vwg	VI No Valves
76	4-71	Own	M	DI	4 4 1/4 x5	D	2	284		133 2000	96 1800	16.00	1000	74	23			2167	Vwg	VI No Valves
77	6-71	Own	M	DI	6 4 1/4 x5	D	2	425		200 2000	145 1800	16.00	1000	75	20			2645	Vwg	VI No Valves
78	Twin 6	Own	M	DI	12 4 1/4 x5	D	2	851		400 2000	290 1800	16.00	1000	75	22			6400	Vwg	VI No Valves
79	Quad 6	Own	M	DI	24 4 1/4 x5	D	2	1702		800 2000	580 1800	16.00	1000	75	24			14000	Vwg	VI No Valves

For page on which Directory of Manufacturers appears, see Table of Contents page 65

For abbreviations see pages 164 and 165

OTHER HEAVY OIL ENGINES

VALVES		PISTONS				PISTON PIN		CONNECTING RODS			MAIN BEARINGS	INJECTION SYSTEM									STARTING METHOD		OVERALL DIMENSIONS			
Exhaust Port Diameter and Lift (In.)	Material	Length (In.)	Weight with Rings and Pin (Lb.)	No. of Compression Rings	No. of Oil Rings	Diameter and Length (In.)	Locked in —	Material (S. A. E. No.)	Center to Center Length (In.)	Weight with Cap and Bushing (Lb.)	Number	Diameter (In.)	Make of Pump	Make of Valve	Valve Type Open or Closed	Orifices	Pressure - Nozzle Opening (Lb. per Sq. In.)	Air Cleaner Make	Fuel Filter - Make	Lubricant Filter Make	Minimum Recommended Cetane Number of Fuel	Make	Type	Length Fan to Flywheel (In.)	Width (In.)	Height To Top of Air Cleaner (In.)	Line Number
2.00 - .640	CI	9.75	27.2	4	2	2.50	5.25	F	1040	17.75	8.2	5	4.62	AB	AB	C	Mu	3000	Vor	Pur	Pur	40	. . . .	A	93 1/2 *	33 1/4	57 1/2	1
2.00 - .640	CI	9.75	27.2	4	2	2.50	5.25	F	1040	17.75	8.2	7	4.62	AB	AB	C	Mu	3000	Vor	Pur	Pur	40	. . . .	A	114 1/8 *	33 1/4	57 1/2	2
1.12 - .429	AA	4.12	2.36	3	2	1.00	2.75	F	1035	7 1/8	2.62	2	2.50	AB	AB	C	Pi	2000	Uni	Com	Fra	45	AL	E-H	18 1/2	19 1/4	29 1/8 (11)	3
1.12 - .429	AA	4.12	2.36	3	2	1.00	2.75	F	1035	7 1/8	2.62	3	2.50	AB	AB	C	Pi	2000	Uni	Com	Fra	45	AL	E-H	22 1/4	19 1/4	29 1/8 (11)	4
1.12 - .429	Alu	4.12	. . . .	3	2	1.00	2.84	F	1035	7 1/8	. . . .	3	2.50	AB	AB	C	Pi	2000	Uni	Com	Fra	45	AL	Ele	30 1/2	19 1/4	25 1/8 (12)	5
1 1/8 - .429	AA	4.46	. . . .	3	2	1.00	x3.10	F	1035	7 1/8	. . . .	3	2.50	AB	AB	C	Pi	2000	Uni	Com	Fra	45	AL	Ele	30 1/2	19 1/4	28 1/8 (12)	6
1.12 - .429	Alu	4.12	. . . .	3	2	1.00	2.84	F	1035	7 1/8	. . . .	7	2.50	AB	AB	C	Pi	2000	Uni	Com	Fra	45	AL	Ele	38 1/2	19 1/4	26 1/8 (12)	7
1 1/8 - .429	AA	4.46	. . . .	3	2	1.00	x3.10	F	1035	7 1/8	. . . .	7	2.50	AB	AB	C	Pi	2000	Uni	Com	Fra	45	AL	Ele	38 1/2	19 1/4	26 1/8 (12)	8
1.18 - .486	Alu	4.93	3.00	3	2	1.25	2.92	F	1035	9.50	3.41	7	3.00	AB	AB	C	Pi	2000	Uni	B-P	DeL	45	DR	Ele	42 1/2	27	33 1/8 (12)	9
1.18 - .486	Alu	4.93	3.00	3	2	1.25	2.92	F	1035	9.50	3.41	7	3.00	AB	AB	C	Pi	2000		B-P	DeL	45	DR	Ele	54 1/4 (11)	27 1/2	34 1/8 (12)	10
1.37 - .476	Alu	5.25	4.48	3	2	1.50	3.56	F	6140	11.00	4.87	7	3.00	AB	AB	C	Pi	2000	Uni	B-P	DeL	45	DR	Ele	46 1/2	25 3/4	37 1/8 (12)	11
1.37 - .476	Alu	5.25	4.48	3	2	1.50	3.56	F	6140	11.00	4.87	7	3.00	AB	AB	C	Pi	2000		B-P	DeL	45	DR	Ele	61 1/2 (11)	29 1/4	36 1/8 (12)	12
2.16 - .687	Alu	9.31	19.19	3	2	2.75	5.53	F	1035	17.75	28.51	7	4.50	AB	AB	C	Pi	1800	Uni	P-S	DeL	45	D-N	E-G	86 1/8	38 1/2	62 1/8 (12)	13
2.16 - .687	Alu	9.31	19.19	3	2	2.75	5.53	F	1035	17.75	28.51	7	4.50	AB	AB	C	Pi	1800		P-S	DeL	45	D-N	E-G	114 1/8 (11)	37 1/4	62 1/8 (12)	14
2.16 - .687	Alu	9.31	19.19	3	2	2.75	5.53	F	1035	17.75	28.51	7	4.50	AB	AB	C	Pi	1800	Uni	P-S	DeL	45	D-N	E-G	95 1/8	48	62 1/8 (12)	15
1.87 - .540	Alu	6.75	6.70	3	2	1.75	4.50	F	1040	12.50	10.62	7	3.75	AB	AB	C	Pi	2000	Uni	Com	Com	45	L-D	E-G	58 1/2	29 1/8	48 1/8	16
1.87 - .540	Alu	6.75	6.70	3	2	1.75	4.50	F	1040	12.50	10.62	7	3.75	AB	AB	C	Pi	2000		Com	Com	45	L-D	E-G	83 1/2	30 1/4	46 1/8	17
1.87 - .540	Alu	6.75	6.70	3	2	1.75	4.50	F	1040	12.50	10.62	7	3.75	AB	AB	C	Pi	2000		Com	DeL	45	L-D	E-G	58 1/2	32 1/2	49 1/8	18
1.87 - .540	Alu	6.75	6.70	3	2	1.75	4.50	F	1040	12.50	10.62	7	3.75	AB	AB	C	Pi	2000		Com	DeL	45	L-D	E-G	89 1/2	36 1/8	45 1/8	19
1.87 - .540	Alu	6.75	6.70	3	2	1.75	4.50	F	1040	12.50	10.62	9	3.75	AB	AB	C	Pi	2000		Com	DeL	45	L-D	E-G	73	30 1/4	48 1/4	20
1.87 - .540	Alu	6.75	6.70	3	2	1.75	4.50	F	1040	12.50	10.62	9	3.75	AB	AB	C	Pi	2000				45	L-D	E-G	101 1/2	36 1/8	46 1/8	21
1.87 - .540	Alu	6.75	6.70	3	2	1.75	4.50	F	1040	12.50	10.62	9	3.75	AB	AB	C	Pi	2000				45	L-D	E-G	83 1/2	32 1/2	53 1/8	22
1.87 - .540	Alu	6.75	6.70	3	2	1.75	4.50	F	1040	12.50	10.62	9	3.75	AB	AB	C	Pi	2000				45	L-D	E-G	101 1/2	36 1/2	49 1/8	23
1.87 - .540	AA	6.75	6.70	3	2	1.75	4.50	F	1040	12.50	10.62	5	3.75	AB	AB	C	Pi	2000	Com	Com	DeL	45	DR	Ele	44 1/2	30 1/8	49 1/4	24
2.16 - .687	AA	9.31	19.19	3	2	2.75	5.53	F	1035	17.75	28.51	7	4.50	AB	AB	C	Pi	1800		Pur	DeL	45	LB	E-G				25
2.16 - .687	AA	9.31	19.19	3	2	2.75	5.53	F	1035	17.75	28.51	7	4.50	AB	AB	C	Pi	1800		Pur	DeL	45	LB	E-G				26
1 1/2 - .424	Alu	6.14	. . . .	3	2	1.81	3.73	F	1045	10.25	. . . .	5	2.75	Own	Own	C	Si		Don	Own	Pur	35	Own	G	56 3/8	27 3/4	51 3/8	27
1 1/2 - .434	Alu	6.14	. . . .	3	2	1.81	3.73	F	1045	10.25	. . . .	5	3.50	Own	Own	C	Si		Don	Own	Pur	35	Own	G	59	29 1/2	50 1/8	28
1 1/2 - .434	Alu	5.52	. . . .	3	2	1.62	3.23	F	1045	10.25	. . . .	7	3.50	Own	Own	C	Si		Don	Own	Pur	35	Own	G	76 5/8	31 1/4	56 5/8	29
2 1/8 - .468	Alu	9.18	. . . .	3	1	2.37	4.75	F	1045	15.00	. . . .	5	3.75	Own	Own	C	Si	1750	Don	Own	Pur	35	Own	G	69 1/2	40	66 5/8	30
2 1/8 - .468	Alu	9.18	. . . .	3	1	2.37	4.75	F	1045	15.00	. . . .	7	3.75	Own	Own	C	Si	1750	Don	Own	Pur	35	Own	G	87 1/2	42 3/4	67 1/2	31
2 1/8 - .468	Alu	9.18	. . . .	3	1	2.37	4.75	F	1045	15.00	. . . .	5	3.75	Own	Own	C	Si	1750	Don	Own	Pur	35	Own	G	88	49 1/2	66 1/2	32
1.75 - .422	NI	6.12	7.87	4	1	1.75	3.50	F	1045	11.50	6.43	4	3.00	AB	AB	C	Pi	2200	Vor	CB	Nug	45	AL	Ele	46	32	53	33
1.75 - .422	NI	6.12	7.87	4	1	1.75	3.50	F	1045	11.50	6.43	6	3.00	AB	AB	C	Pi	2200	Vor	CB	Nug	45	AL	Ele	66	32	53	34
1.06 - .375	AA	3.75	. . . .	3	1	1.12	. . . .	F	S B-CLM	7.00	. . . .	3	2.37	A-E	A-E		Si	(a)	Opt	. . . .	. . . .	. . . .	. . . .	Ele	31 1/2	19 1/2	30 1/4	35
1.25 - .328	AA	4.31	. . . .	3	1	1.25	. . . .	F	S B-BAB	9.50	. . . .	3	2.87	A-E	A-E		Si	(a)		. . . .	. . . .	. . . .	. . . .	Ele	33 3/8	21 1/2	35	36
1.25 - .328	AA	4.31	. . . .	3	1	1.25	. . . .	F	S B-BAB	9.50	. . . .	3	2.87	A-E	A-E		Si	(a)		. . . .	. . . .	. . . .	. . . .	Ele	33 3/8	21 1/2	35	37
1.50 - .437	AA	4.68	. . . .	3	1	1.43	. . . .	F	S B-BAB	8.37	. . . .	7	2.87	A-E	A-E		Si	(a)	Opt	. . . .	. . . .	. . . .	. . . .	Ele	47 1/2	27 1/2	37 1/4	38
1.65 - .546	AA	5.93	. . . .	3	1	1.50	. . . .	F	S B-BAB	10.50	. . . .	7	3.25	A-E	A-E		Si	(a)	Opt	. . . .	. . . .	. . . .	. . . .	Ele	51 1/2	31 3/4	44 1/2	39
1.50 - .437	AA	4.75	. . . .	3	1	1.25	. . . .	F	LB-CNM	8.37	. . . .	7	2.87	A-E	A-E		Si	(a)	Opt	. . . .	. . . .	. . . .	. . . .	Ele	. . . .	. . . .	. . . .	40
1.65 - .546	AA	5.93	. . . .	3	.	1.50	. . . .	F	LB-CNM	10.50	. . . .	7	3.25	A-E	A-E		Si	(a)	Opt	. . . .	. . . .	. . . .	. . . .	Ele	. . . .	. . . .	. . . .	41
1.37 - .406	CI	5.04	5.70	3	2	1.49	3.37	F	. . . . .	9.50	6.8	7	3.87	Own	Own		Mu	. . . .	Don	Com	Nug	45	L-D	Ele	46 3/8 (2)	28 3/4	39 1/8 (3)	42
1.75 - .500	CI	6.25	10.56	3	2	1.99	4.09	F	. . . . .	12.00	10 1/4	5	4.50	Own	Own		Mu	. . . .	Don	Com	Nug	45	L-D	Ele	43 3/8 (2)	28 3/4	47 1/8 (3)	43
1.75 - .500	CI	6.25	10.56	3	2	1.99	4.09	F	. . . . .	12.00	10 1/4	7	4.50	Own	Own		Mu	. . . .	Don	Com	Nug	45	L-D	Ele	57 1/2 (2)	29 3/4	47 1/8 (3)	44
1.75 - .500	Alu	6.25	7.21	3	2	1.99	4.09	F	. . . . .	12.00	10 1/4	7	4.50	Own	Own		Mu	. . . .	Don	Com	Nug	45	L-D	Ele	60 1/2 (2)	30 1/2	47 1/8 (3)	45
1.56 - .420	Alu	6.25	8.75	3	1	1.99	4.34	F	. . . . .	12.00	10 1/2	7	4.50	Own	Own		Mu	. . . .	Don	Com	AM	45	L-D	Ele	61 1/2	28 1/2	49 1/8	46
1.56 - .420	Alu	6.25	8.65	3	1	1.99	4.34	F	. . . . .	12.00	10 1/2	7	4.50	Own	Own		Mu	. . . .	Don	Com	AM	45	L-D	Ele	60 1/2 (2)	32 3/4	48 1/8	47
1.75 - .500	Alu	6.25	8.75	3	1	1.99	4.34	F	. . . . .	12.00	10.50	7	4.50	Own	Own		Mu	. . . .	Don	Com	AM	45	L-D	Ele	57 1/2	27 3/4	47 1/8	48
2.75 - .718	CI	10 1/2	38.07	5	2	2 1/2	6.00	F	. . . . .	18.00	. . . .	7	5.50	Own	Own		Mu	. . . .	Don	Nug	Nug	45	. . . .	A-EI	99	44 3/8	58 3/4	49
. . . . .	CI	. . . .	. . . .	3	2	. . . .	. . . .	. . . .	. . . . .	. . . .	. . . .	2	2.00	Own	Own	C	Si		2300 AM	Fra	Fra	. . . .	. . . .	. . . .	. . . .	. . . .	. . . .	50
. . . . .	CI	. . . .	. . . .	3	2	. . . .	. . . .	. . . .	. . . . .	. . . .	. . . .	2	2.75	Own	Own	C	Si		2300 AM	Fra	Fra	. . . .	. . . .	E-H	36 1/2	24	46	51
. . . . .	CI	. . . .	. . . .	3	2	. . . .	. . . .	. . . .	. . . . .	. . . .	. . . .	2	2.75	Own	Own	C	Si		2300 AM	Fra	Fra	. . . .	. . . .	E-H	36 1/2	24	46	52
. . . . .	CI	. . . .	. . . .	3	2	. . . .	. . . .	. . . .	. . . . .	. . . .	. . . .	3	2.75	Own	Own	C	Si		2300 AM	Fra	Fra	. . . .	. . . .	E-H	44 3/8	28	45	53
. . . . .	CI	. . . .	. . . .	3	2	. . . .	. . . .	. . . .	. . . . .	. . . .	. . . .	3	2.75	Own	Own	C	Si		2300 AM	Fra	Fra	. . . .	. . . .	E-H	44 3/8	28	45	54
. . . . .	CI	. . . .	. . . .	3	2	. . . .	. . . .	. . . .	. . . . .	. . . .	. . . .	4	2.75	Own	Own	C	Si		2300 AM	Fra	Fra	. . . .	. . . .	E-H	54	30	48 1/2	55
. . . . .	CI	. . . .	. . . .	3	2	. . . .	. . . .	. . . .	. . . . .	. . . .	. . . .	4	2.75	Own	Own	C	Si		2300 AM	Fra	Fra	. . . .	. . . .	E-H	54	30	48 1/2	56
. . . . .	CI	. . . .	. . . .	3	2	. . . .	. . . .	. . . .	. . . . .	. . . .	. . . .	7	3.18	Own	Own	C	Si		2300 AM	Fra	Fra	. . . .	. . . .	E-H	69 1/2	30	48 1/2	57
. . . . .	CI	. . . .	. . . .	3	2	. . . .	. . . .	. . . .	. . . . .	. . . .	. . . .	7	3.18	Own	Own	C	Si		2300 AM	Fra	Fra	. . . .	. . . .	E-H	69 1/2	30	48 1/2	58
1.00 -	AA	. . . .	. . . .	3	1	. . . .	. . . .	. . . .	. . . . .	. . . .	. . . .	2	2.00	AC	DA	C	Pi		2000 AC	AC	Pur	45	. . . .	E-H	18	18	21 1/2	59
. . . . .	CI	. . . .	. . . .	6	2	. . . .	. . . .	. . . .	. . . . .	. . . .	. . . .	.	5.50	Own	Own	C	Mu		2500	. . . .	. . . .	45	. . . .	A	131	34	67	60
1.25 - .385	AT	6.00	7.68	4	2	1.50	3.62	F	1340	10.12	6.16	3	3.50	Own	Own	C	Mu		AC	AC	AC	45	DR	Ele	31	27 3/4	38 1/4 *	61
1.25 - .385	AT	6.00	7.68	4	2	1.50	3.62	F	1340	10.12	6.16	4	3.50	Own	Own	C	Mu		AC	AC	AC	45	DR	Ele	37 1/2	29 1/2	40 1/2 **	62
1.25 - .385	AT	6.00	7.68	4	2	1.50	3.62	F	1340	10.12	6.16	5	3.50	Own	Own	C	Mu		AC	AC	AC	45	DR	Ele	42 1/2	29 1/2	41 1/2 **	63
1.25 - .385	AT	6.00	7.68	4	2	1.50	3.62	F	1340	10.12	6.16	7	3.50	Own	Own	C	Mu		AC	AC	AC	45	DR	Ele	54 1/2	29 1/2	44 1/2 **	64
1.25 - .385	AT	6.00	7.68	4	2	1.50	3.62	F	1340	10.12	6.16	10	3.50	Own	Own	C	Mu		AC	AC	AC	45	DR	Ele	68 1/2 (15)	56 (15)	57 1/2 (15)	65
1.25 - .385	AT	6.00	7.68	4	2	1.50	3.62	F	1340	10.12	6.16	14	3.50	Own	Own	C	Mu		AC	AC	AC	45	DR	Ele	79 3/4 (15)	56 (15)	57 1/2 (15) ‡‡	66
1.25 - .385	AT	6.00	7.68	4	2	1.50	3.62	F	1340	10.12	6.16	28	3.50	Own	Own	C	Mu		AC	AC	AC	45	DR	Ele	175 (15)	56 1/2 (15)	68 5/8 (15) ‡‡	67
1.25 - .385	AT	6.00	7.68	4	2	1.50	3.62	F	1340	10.12	6.16	3	3.50	Own	Own	C	Mu		AS	AC	AC	45	DR	Ele	Vwg46 1/2 **	62 3/8	Vwg35 1/2 **	68
1.25 - .385	AT	6.00	7.68	4	2	1.50	3.62	F	1340	10.12	6.16	4	3.50	Own	Own	C	Mu		AS	AC	AC	45	DR	Ele	Vwg 51 1/2	32 3/8	Vwg39 1/2 **	69
1.25 - .385	AT	6.00	7.68	4	2	1.50	3.62	F	1340	10.12	6.16	5	3.50	Own	Own	C	Mu		AS	AC	AC	45	DR	Ele	Vwg 56 1/2	31 1/2	Vwg39 1/2 **	70
1.25 - .385	AT	6.00	7.68	4	2	1.50	3.62	F	1340	10.12	6.16	7	3.50	Own	Own	C	Mu		AS	AC	AC	45	DR	Ele	Vwg 66 1/2	31 1/2	Vwg39 1/2 **	71
1.25 - .385	AT	6.00	7.68	4	2	1.50	3.62	F	1340	10.12	6.16	14	3.50	Own	Own	C	Mu		AS	AC	AC	45	DR	Ele	70 1/2	58 1/4	54 1/4 ‡‡	72
1.25 - .385	AT	6.00	7.68	4	2	1.50	3.62	F	1340	10.12	6.16	28	3.50	Own	Own	C	Mu		AS	AC	AC	45	DR	Ele	127 1/2	55 1/4	54 1/4 ‡‡	73
1.25 - .385	AT	6.00	7.68	4	2	1.50	3.62	F	1340	10.12	6.16	4	3.50	Own	Own	C	Mu		AS	AC	AC	45	DR	Ele	Vwg 51 1/2	32 3/8	Vwg39 1/2 ‡‡	74
1.25 - .385	AT	6.00	7.68	4	2	1.50	3.62	F	1340	10.12	6.16	5	3.50	Own	Own	C	Mu		AS	AC	AC	45	DR	Ele	Vwg 56 1/2	32 3/8	Vwg39 1/2 ‡‡	75
1.25 - .385	AT	6.00	7.68	4	2	1.50	3.62	F	1340	10.12	6.16	7	3.50	Own	Own	C	Mu		AS	AC	AC	45	DR	Ele	Vwg 66 1/2	32 3/8	Vwg39 1/2 ‡‡	76
1.25 - .385	AT	6.00	7.68	4	2	1.50	3.62	F	1340	10.12	6.16	14	3.50	Own	Own	C	Mu		AS	AC	AC	45	DR	Ele	Vwg 70 1/2	55 1/4	54 1/4 ‡‡	77
1.25 - .385	AT	6.00	7.68	4	2	1.50	3.62	F	1340	10.12	6.16	28	3.50	Own	Own	C	Mu		AS	AC	AC	45	DR	Ele	Vwg 127 1/2	55 1/4	54 1/4 ‡‡	78
1.25 - .385	AT	6.00	7.68	4	2	1.50	3.62	F	1340	10.12	6.16	3	3.50	Own	Own	C	Mu		AC	AC	AC	45	DR	Ele	Vwg 46 1/2	Vwg 32 3/8	Vwg 35 1/2	79

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AUTOMOTIVE DIESEL AND OTHER

Line Number	ENGINE MAKE AND MODEL	Built Under License from	Designed for	GENERAL: Type	Number of Cylinders Bore and Stroke In.	Cylinder Liners	Cycle	Piston Displacement Cu. In.	With Bare Engine: Maximum Brake Hp. at Specified R.P.M.	With Standard Accessories: Max. Intermittent Hp. at Specified R.P.M.	With Standard Accessories: Continuous Sustained Hp. at Specified R.P.M.	Compression Ratio to 1	Max. Combustion Pressure Lb. per Sq. In.	B.M.E.P. at Continuous Hp. Lb. per Sq. In.	Weight per Continuous Hp. Lb.	Max. Torque in Lb. Ft. at Specified R.P.M.	Shipping Weight (Lb.): Automotive or Industrial	Shipping Weight (Lb.): Marine	VALVES: Arrangement	VALVES: Intake Port Diameter and Lift (In.)
1	Gray Marine Four D-157		M	PC	4 3½x5½	W	4	157	35 1800						34.2	108 1800		1100	VI	1.18 - .273
2	Four D-260		M	PC	4 3⅞x5½	W	4	260	55 1800						27.2	167 1200		1400	VI	1.37 - .249
3	Six D-572		M	PC	6 4¼x5½	D	4	572	150 2200						13.0	401 1600		2750	VI	1.87 -
4	Hallett AC1	Own	Tr.I	PC	1 3½x3½	N	4	35	6 1800	6 1800	5 1800	21.50	1000	80	37.0		185		VI	1.25 - .315
5	DI-A	Own	I	PC	1 3½x4½	N	4	50	9.5 1500	9 1500	8 1500	21.60	1000	84	83.5	32 1800	450	625	VI	1.62 - .313
6	D2-M	Own	I	PC	2 3½x4½	N	4	100	19.5 1500	19 1500	18 1500	21.60	1000	97	87.5	64 1800	590	760	VI	1.62 - .315
7	Hercules DIXC	Own	Tr.M.I	TC	2 4x4½	D	4	113	27 1800	23 1800	23 1800	15.50	750	92	23.9	81 1400	550		VI	1.62 - .375
8	DIXD	Own	Tr.M.I	TC	2 4½x4½	D	4	127	27.6 1600	23.5 1600	23.5 1600	15.50	750	92	25.9	91 1300	550		VI	1.62 - .375
9	DIX4B	Own	T.B.Tr.M.R.I	TC	4 3½x4½	D	4	133	46 3000	39 3000	38 2400	15.00	825	89	15.2	98 1600	550		VI	1.37 - .350
10	DIX4D	Own	T.B.Tr.M.R.I	TC	4 3⅞x5½	D	4	165	57 3000	48 3000	45 2400	15.00	825	90	12.2	122 1600	550		VI	1.50 - .350
11	DOOB	Own	T.Tr.M.I.B	TC	4 4x4½	D	4	193	62 2600	53 2600	41 1800	15.00	750	91	18.3	142 1400	750		VI	1.62 - .375
12	DOOC	Own	T.Tr.M.I.B	TC	4 4½x4½	D	4	226	70 2600	60 2600	47 1800	15.00	750	91	15.9	162 1400	750		VI	1.62 - .375
13	DOOD	Own	T.Tr.M.I.B	TC	4 4½x5½	D	4	255	79 2600	66 2600	53 1800	15.00	750	91	14.2	182 1400	750		VI	1.62 - .375
14	DIX60	Own	Tr.M.B.R.T.I	TC	6 3⅜x4½	D	4	249	92 3000	78 3000	71 2400	15.50	825	93	10.9	192 1800	780		VI	1.62 - .375
15	DJXB	Own	T.B.Tr.M.R.I	TC	6 3½x4½	D	4	290	77 2600	66 2600	51 1800	15.00	750	87	18.6	179 1300	950		VI	1.62 - .375
16	DJXC	Own	T.B.Tr.M.R.I	TC	6 3¾x4½	D	4	298	99 2600	84 2600	66 1800	15.00	750	97	16.1	208 1330	950		VI	1.62 - .375
17	DJXH	Own	T.B.Tr.M.I	TC	6 4x4½	D	4	358	118 2600	100 2600	81 1800	15.00	750	100	14.7	320 1330	930		VI	1.75 - .375
18	DWXC	Own	T.B.Tr.M.R.I	TC	6 4¼x4½	D	4	404	135 2600	115 2600	92 1800	15.00	750	100	16.7	284 1600	1350		VI	1.68 - .395
19	DWXD	Own	T.B.Tr.M.R.I	TC	6 4½x4½	D	4	426	142 2600	121 2600	97 1800	15.00	750	103	14.7	320 1600	1350		VI	1.68 - .395
20	DWXLD	Own	T.B.Tr.M.R.I	TC	6 4½x5	D	4	426	142 2600	121 2600	90 1800	15.00	750	93	15.0	316 1600	1350		VI	1.68 - .395
21	DWXLDF	Own	B.M.R	TC	6 4½x5	D	4	426	142 2600	121 2600	89 1600	15.00	750	94	18.0	340 1200	1630		VI	2.00 - .395
22	DRXB	Own	T.B.Tr.M.R.I	TC	6 4¾x5½	D	4	474	132 2200	112 2200	89 1600	15.00	750	94	16.0	395 1200	1600		VI	2.00 - .395
23	DRXC	Own	T.B.Tr.M.R.I	TC	6 4¾x5½	D	4	529	147 2200	125 2200	100 1600	15.00	750	94	16.4	530 1350	2500		VI	2.37 - .500
24	DFXB	Own	T.B.M.Tr.I	TC	6 5x6	D	4	707	193 2100	162 2100	136 1600	14.80	750	95	16.8	585 1350	2500		VI	2.37 - .500
25	DFXC	Own	T.B.M.Tr.I	TC	6 5½x6	D	4	779	201 2100	173 2100	149 1600	14.80	750	95	16.8	645 1200	2500		VI	2.37 - .500
26	DFXD	Own	T.B.M.Tr.I	TC	6 5½x6	D	4	855	217 2100	184 2100	162 1600	14.80	750	94	15.4	680 1200	2500		VI	2.37 - .500
27	DFXE	Own	T.B.Tr.M.R.I	TC	6 5½x6	D	4	895	225 2100	194 2100	170 1600	14.80	750	94	14.7	680 1200	2575		VI	2.60 - .500
28	DFXH	Own	T.B.Tr.M.R.I	TC	6 5½x6	D	4	935	260 2100	221 2100	187 1600	14.80	750	99	13.8	750 1200	2575			2.60 - .500
29	DFXHF	Own	B.M.R	TC	6 5½x6	D	4	935	260 2100	221 2100	187 1600	14.80	750	94	15.1	1100 1200	4200		VI	2.87 - .500
30	DNX-V8	Own	T.B.Tr.M.I	TC	8 6½x6	D	4	1468	400 2100	340 2100	278 1630	14.80	750	94	15.1	1100 1200	4200		VI	2.87 - .500
31	DNX-V8S	Own	M.I	TC	8 6½x6	D	4	1468	500 2100	425 2100	345 1600	14.90	750	115	13.9	1320 1400	4800		VI	2.87 - .500
32	Hill 2R	Own	M.I	PC	2 3⅜x5½	D	4	106	19 1500	17.3 1500	16.8 1500	16.90		85	64	69 1200	1225	1300	VI	1.37 - .372
33	4R	Own	M.I	PC	4 3⅜x5½	D	4	212	41 1500	36.3 1500	33 1500	16.00		85	44	142 1200	1615	1750	VI	1.37 - .372
34	6R	Own	M.I	PC	6 3⅜x5½	D	4	317	63 1500	55 1500	50 1500	16.00		85	37.5	225 1200	2150	2300	VI	1.37 - .372
35	International UD6	Own	Tr.I	PC	4 3⅞x5½	D	4	248	40.5 1500	39 1500	31.2 1500	14.20		66	38.9	151 800	1215		VI	1.50 - .500
36	UD9	Own	Tr.I	PC	4 4x5½	D	4	334	55 1500	53 1500	42.4 1500	14.40		67	35.0	209 800	1485		VI	1.66 - .500
37	UD14A	Own	Tr.I	PC	4 4½x6	W	4	461	79 1400	76 1400	60.8 1400	15.5		75	29.2	322 850	1775		VI	1.78 - .532
38	UD18	Own	Tr.I	PC	6 4.4x5.5	D	4	502	103 1800	100 1800	80 1800	16.60		70	27.3	330 1000	2180		VI	1.66 - .532
39	UD18A	Own	Tr.I	PC	6 4½x6	W	4	691	131 1600	125 1600	100 1600	15.5		72	28.6	482 850	2880		VI	1.78 - .532
40	UD24	Own	Tr.I	PC	6 5½x7	D	4	1091	191 1375	180 1375	144 1375	15.20		76	26.6	775 800	3825		VI	2.31 - .625
41	Kermath 2-127		M	TC	2 4½x4½	D	4	127	28 1600	27 1800	20 1800	15.50	750	78	43.5	81 1400		870	VI	1.62 - .375
42	4-226		M	TC	4 4x4½	D	4	226	70 2600	60 2600	50 2000	14.50	500	66	24.5	162 1400		1200	VI	1.62 - .375
43	6-298		M	TC	6 3⅜x4½	D	4	298	83 2600	70 2200	60 1900	14.50	500	64	21.5	208 1500		1355	VI	1.62 - .375
44	6-474		M	TC	6 4½x5½	D	4	474	132 2200	110 2000	95 1800	14.50	475	79	24.7	350 1300		2100	VI	2.00 - .385
45	6-895		M	TC	6 5½x6	D	4	895	228 2100	195 2100	170 1600	14.50	750	94	24.5	680 1200		3800	VI	2.37 - .500
46	Lister (1) CD	Lister	M.I	PC	1 4½x4½	D	4	69.5	8.75 1200	7.2 1200	6.2 1200		800	80	198.4	37 1000		1230	VI	1.43 - .380
47	CE	Lister	M.I	PC	2 4½x4½	D	4	139	17.5 1200	14.4 1200	12.4 1200		800	80	109.2	73 1000		1355	VI	1.43 - .380
48	Mack END-457	Lanova	T	LE	6 4½x5½	D	4	457	110 2200	97.5 2200		13.64	840	105		318 1250	1840		VI	1.46 - .418
49	END-672	Lanova	T	LE	6 4½x6	D	4	672	150 2000	138 2000		14.76	840	99		440 1200	2220		VI	1.90 - .500
50	END-672	Lanova	B	LE	6 4½x6	D		672	165 2000	146 2000		14.76	840	108		480 1200	2235		VI	1.90 - .500
51	Murphy ME-4	Own	M.I	DI	4 5½x6½	W	4	675		105 1200	90 1200	17.00		88	47.7	472 900	+4300	6350	V2	1.62d - .500
52	ME-6	Own	M.I	DI	6 5½x6½	W	4	1013		150 1200	135 1200	17.00		88	38.5	716 800	+5200	7940	V2	1.62d - .500
53	*ME-680	Own	M.I	DI	6 6x6½	W	4	1103		180 1200	165 1200	17.00		107	35.7	925 750	+5800	8190	V2	1.62d - .500
54	ME-66	Own	M.I	DI	6 6x6½	W	4	1103		165 1200	150 1200	17.00		90	34.5	814 800	+5200	7940	V2	1.62d - .500
55	ME-88	Own	M.I	DI	4 6x6½	W	4	735		115 1200	100 1200	17.00		90	43.0	553 800	+4300	6350	V2	1.62d - .500
56	Red Wing DO		M	TC	4 4½x4½	D		255	79 2600	75 2400	56 1600	15.00	750	91		182 1400			VI	1.62 - .375
57	42-54HP		M	DI	4 4x5	W	4	251	55 2200	54 2000	43 1500	5.90	500	65	25.6	155 1000		1100	VI	1.62 - .445
58	55-60HP		M	DI	4 4¾x5½	W	4	353	62 1500	59 1600	55 1400	5.90	500	65	21.8	230 800		1209	VI	1.75 - .450
59	100-125HP		M	DI	6 4½x5	W	4	425	128 2100	125 2100	106 1500	5.80	500	74	17.0	383 1000		1800	VI	1.87 - .533
60	148DK		M	TC	6 5½x6	W	4	779	168 2000	138 2000	102 1400	17.50	750	80		530 1200			HI	2.25 - .500
61	6WAKD		M	TC	6 6½x6	W	4	1197	225 1600	185 1600	152 1300	16.50	750	83		845 900			HI	2.37 - .656
62	Scripps 7000-1, 2, 3		M	TC	4 4½x4½	D	4	255	79 2600	68 2600	53 1800	15.00	750	91	23.1	185 1400		1200	VI	1.62 - .375
63	8500-1, 2, 3		M	TC	6 3¾x4½	D	4	298	84 2600	71 2600	59 1800	15.00	750	88	21.1	208 1500		1435	VI	1.62 - .375
64	Sheppard 14 and 14C		Tr.M.I	PC	1 3x4	N	4	28.0	5.4 1900	4.8 1900	3.50 1800	18.0	650	55	94.0	11 1500	330	425	VI	1.09 - .209
65	7D, E		I,Tr	PC	3 4½x5	W	4	71.0	15 2000	12 1800	11 1800	18.0	625	68	79.5	55 1000	875		VI	1.37 - .313
66	13D, E & F		Tr.M.I	PC	2 4½x5	W	4	142	33 2000	25 1800	22 1800	18.0	625	68	47.7	106 1200	1050	1500	VI	1.37 - .313
67	6D, E & F		Tr.M.I	PC	3 4½x5	W	4	213	50 2000	38 1800	34 1800	18.0	625	69	38.9	161 1200	1325	1750	VI	1.37 - .313
68	12D, E & F		T.M.I	PC	6 4½x6	W	4	426	100 2000	75 1800	67 1800	18.0	625	70	26.6	325 1200	1790	2330	VI	1.37 - .313
69	Sterling VD6		M.R.I		6 6x9	W	4	2714		325 1200	270 1000	14.00	1000	80	33.9	1420	9180	8850	VI	2.37 - .525
70	VD6S		M.R.I		6 6x9	W	4	2714		495 1200	410 1000	14.00	1000	120	24.4	2155	10000	9550	VI	2.37 - .525
71	VD8		M.R.I		8 6x9	W	4	3619		440 1200	370 1000	14.00	1000	80	28.9	1945	10700	10250	VI	2.37 - .525
72	VD8S		M.R.I		8 6x9	W	4	3619		680 1200	550 1000	14.00	1000	120	21.6	2890	11900	11300	VI	2.37 - .525
73	Viking DB4		M.I	TC	4 5½x7	W	4	665		90 1200	76 1200	11.80	750	75	50.7	475 1200	4550	4400	VI	2.19 - .649
74	Viking DB6		M.I	TC	6 5½x7	W	4	998		170 1500	114 1200	11.80	750	75	45.5	737 1000	5950	5350	VI	2.19 - .649
75	Viking DB8		M.I	TC	8 5½x7	W	4	1330		230 1500	152 1200	11.80	750	75	45.0	940 1000	7850	6800	VI	2.19 - .649
76	Waukesha (14) 130HS	Hes	Tr	DI	4 3¾x5	W	4	221	48 2200	38 2200	28 1500	6.12	500	67	24.8	142 1000	695		VI	1.62 - .445
77	(14) 130HL	Hes	Tr	DI	4 4x5	W	4	251	55 2200	44 2200	31 1500	5.90	500	65	22.7	155 1000	705		VI	1.62 - .445
78	(14) VRZH	Hes	Tr	DI	4 4¼x5½	W	4	353	59 1600	47 1600	41 1400	5.60	500	65	25.6	229 700	1050		VI	1.75 - .450
79	190DLB		T.Tr.I	TC	6 3¾x4	W	4	265	64 2200	53 1800	42.5 1800	15.3	750	71		184 1200			VI	1.62 - .359
80	(13) 140HS	Hes	I	DI	6 4½x5½	W	4	468	114 2250	95 2250	67 1500	5.80	500	75	22.5	342 1000	1510		VI	1.37 - .359
81	(13) 140HK	Hes	I	DI	6 4¼x5½	W	4	525	128 2250	109 2250	75 1500	5.80	500	74	21.0	383 1000	1550		VI	1.87 - .531
82	148DK		T.I	TC	6 5½x6	W	4	779	168 2000	138 2000	102 1400	17.5	750	80	21.0	530 1200	2150		VI	2.25 - .500

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For abbreviations see pages 164 and 165

HEAVY OIL ENGINES—*Continued*

VALVES	PISTONS					PISTON PIN		CONNECTING RODS				MAIN BEARINGS		INJECTION SYSTEM								STARTING METHOD		OVERALL DIMENSIONS			
Exhaust Port Diameter and Lift (In.)	Material	Length (In.)	Weight with Rings and Pin (Lb.)	No. of Compression Rings	No. of Oil Rings	Diameter and Length (In.)	Locked in—	Material (S. A. E. No.)	Center to Center Length (In.)	Weight with Cap and Bushing (Lb.)	Number	Diameter (In.)	Make of Pump	Make of Valve	Valve Type—Open or Closed	Orifices	Pressure—Nozzle Opening (Lb. per Sq. In.)	Air Cleaner—Make	Fuel Filter—Make	Lubricant Filter—Make	Minimum Recommended Cetane Number of Fuel	Make	Type	Length—Fan to Flywheel (In.)	Width (In.)	Height—To Top of Air Cleaner (In.)	Line Number
1.09— .273	AA	3.75		3	2	1.12 2.75	F	1035	7.00		3	2.47	AB	AB		Pi	1800	Own	ACB	Mic	45	AL	Ele	49 1/8	20 1/4	33 1/4	1
1.25— .248	AA	4.31		3	2	1.25 3.31	F	1035	9.50		3	2.87	AB	AB		Pi	1800	Own	ACB	Mic	45	AL	Ele	54 1/8	21 1/8	34 1/8	2
1.00—	AA	6.00		3	2	1.50 4.00	F	1035	10.50	4.72	5	3.37	AB	AB		Pi	1800	Own	ACB	Mic	45	DA	Ele	68 1/8	28	40 1/8	3
1.25 .315	AA		2.25	3	1	1.31 2.96	F	4140	7.00	2.75	2		AB			Pi	1800	AM	Pur	Pur	36		Ha		15	24	4
1.62— .312	Alu	5.25	4.00	4	1	1.37 3.40	F	1045	9.00	4.67	2		AB			Pi	1600	AM	Pur	Pur	36	AL	Ele	24.13	24	28.87	5
1.62 .315	Alu	5.25	4.00	4	1	1.37 3.40	F	1045	9.00	4.67	2		AB			Pi	1600	AM	Pur	Pur	36	AL	Ele	41 1/4	23	31 1/4	6
1.12— .375	Alu	4.84	4.00	4	2	1.18-3.45	F	CNM	8.00	5.31	2	3.00	AB	AB	C	Pi	1450				45	DR	EAH	27 1/2 (2)	16 5/8	38 1/2	7
1.12— .375	Alu	4.84	4.47	4	2	1.18 3.70	F	CNM	8.00	5.31	2	3.00	AB	AB	C	Pi	1450				45	DR	EAH	27 1/2 (2)	16 5/8	38 1/2	8
1.12— .350	Alu	4.03	3.20	3	2	1.12-2.62	F	CNM	7.75	4.20	5	2.75	AB	AB	C	Pi	1650				45	LDA	A-E1	20 1/8	21	32 1/2	9
1.12— .350	Alu	4.03	3.20	3	2	1.12-2.87	F	CNM	7.75	4.20	5	2.75	AB	AB	C	Pi	1650				45	LDA	A-E1	20 1/8	21	32 1/2	10
1.12— .375	Alu	4.84	3.56	4	2	1.18-3.20	F	CNM	8.00	5.31	5	3.00	AB	AB	C	Pi	1650				45	LDA	EGA	32 1/8 (2)	22 1/8	36	11
1.12— .375	Alu	4.84	4.00	4	2	1.18-3.45	F	CNM	8.00	5.31	5	3.00	AB	AB	C	Pi	1650				45	LDA	EGA	32 1/8 (2)	22 1/8	36	12
1.12— .375	Alu	4.84	4.47	4	2	1.18-3.70	F	CNM	8.00	5.31	5	3.00	AB	AB	C	Pi	1650				45	LDA	EGA	32 1/8 (2)	22 1/8	36	13
1.12— .350	Alu	4.03	3.20	3	2	1.12 2.87	F	CNM	7.75	4.20	7	2.75	AB	AB	C	Pi	1650				45	LDA	A-E1	38	21	32 1/2	14
1.12— .375	Alu	4.84	3.12	4	2	1.18-2.95	F	CNM	8.00	5.31	7	3.00	AB	AB	C	Pi	1650				45	LDA	EGA	39 (2)	22 1/8	32 1/4	15
1.12— .375	Alu	4.84	3.56	4	2	1.18-3.20	F	CNM	8.00	5.31	7	3.00	AB	AB	C	Pi	1650				45	LDA	EGA	39 (2)	22 1/8	32 1/4	16
1.31— .375	Alu	4.84	3.58	3	2	1.18-3.20	F	CNM	8.00	5.31	7	3.00	AB	AB	C	Pi	1650				45	LDA	EGA	39 (2)	22 1/8	33 1/8	17
1.25— .395	Alu	4.84	4.00	3	2	1.50-3.62	F	CNM	8.50	7.31	7	3.50	AB	AB	C	Pi	1650				45	LDA	EGA	46 1/2 (2)	25 1/8	36 1/2	18
1.25— .395	Alu	4.84	4.47	3	2	1.50-3.62	F	CNM	8.50	7.00	7	3.50	AB	AB	C	Pi	1650				45	LDA	EGA	46 1/2 (2)	25 1/8	36 1/2	19
1.25— .395	Alu	4.84	4.47	3	2	1.50-3.62	F	CNM	8.50	7.00	7	3.50	AB	AB	C	Pi	1650				45	LDA	AEG	46 1/2	25 1/8	36 1/2	20
1.25— .395	Alu	4.84	4.47	3	2	1.50-3.62	F	CNM	8.50	7.00	7	3.50	AB	AB	C	Pi	1650				45	LDA	AEG	55 1/2	39 1/8	17 1/4	21
1.37— .395	Alu	6.84	7.09	4	2	1.62-3.75	F	CNM	9.37	8.59	7	3.50	AB	AB	C	Pi	1650				45	LDA	AEG	46 1/2 (2)	27	38 1/4	22
1.37— .395	Alu	6.84	7.93	4	2	1.62-3.93	F	CNM	9.37	8.59	7	3.50	AB	AB	C	Pi	1650				45	LDA	EGA	46 1/2 (2)	27	38 1/4	23
1.62— .500	Alu	7.53	9.94	4	2	2.00-4.18	F	CNM	12.00	13.75	7	4.50	AB	AB	C	Pi	2000				45	LDA	EGA	62 1/2 (2)	30 1/8	48 1/8	24
1.62— .500	Alu	7.53	11.69	4	2	2.00-4.42	F	CNM	12.00	13.75	7	4.50	AB	AB	C	Pi	2000				45	LDA	EGA	62 1/2 (2)	30 1/8	48 1/8	25
1.62— .500	Alu	7.53	12.37	4	2	2.00-4.65	F	CNM	12.00	13.75	7	4.50	AB	AB	C	Pi	2000				45	LDA	EGA	62 1/2	30 1/8	48 1/8	26
1.62— .500	Alu	7.53	12.34	4	2	2.00-4.65	F	CNM	12.00	13.75	7	4.50	AB	AB	C	Pi	2000				45	LDA	EGA	62 1/2 (2)	30 1/8	48 1/8	27
1.90— .500	Alu	7.53	12.60	4	2	2.00-4.90	F	CNM	12.00	13.75	7	4.50	AB	AB	C	Pi	2000				45	LDA	EGA	62 1/2 (2)	30 1/8	48 1/8	28
1.62— .500	Alu	7.53	12.34	4	2	2.00-4.65	F	CNM	12.00	13.75	7	4.50	AB	AB	C	Pi	2000				45	LDA	EGA	61 1/2	48 1/8	31 1/2	29
2.12— .500	Alu	7.53	12.90	4	2	2.00-5.40	F	CNM	13.25		5	4.50	AB	AB	C	Pi	2000				45	LD	EGA	57 1/4	42	55 1/4	30
2.12— .500	Alu	7.53	12.90	4	2	2.00-5.40	F	CNM	13.25		5	4.50	AB	AB	C	Pi	2000				45	LD	EGA	67	42	55 1/4	31
1.37— .372	Lyn	4.87	2.83	3	2	1.50-2.72	F	4140	13.25	7.3	3	2.93	AB	A-E	C	Pi	1800	Uni	Fram	Cun	50	AL	E-H	35	25	40	32
1.37— .372	Lyn	4.87	2.83	3	2	1.50-2.72	F	4140	13.25	7.3	5	2.93	AB	A-E	C	Pi	1800	Uni	Fram	Cun	50	AL	Ele	47 1/2	25	40	33
1.37— .372	Lyn	4.87	2.83	3	2	1.50-2.72	F	4140	13.25	7.3	7	2.93	AB	A-E	C	Pi	1800	Uni	Fram	Cun	50	AL	Ele	58	27	45	34
1.31— .437	AA	5.70	4.41	3	2	1.31-3.25	F	1040	10.00	8.12	5	3.75	Own	Own	C	Si	700	Don	Pur	Pur		Own	Ha	38 1/2	23	39 1/8	35
1.47— .500	AA	6.44	6.28	3	2	1.50-3.71	F	1040	11.00	11.19	5	4.12	Own	Own	C	Si	700	Don	Pur	Pur		Own	Ha	41 1/2	24	42 1/2	36
1.53— .532	AA	6.19	7.36	4	2	1.62-4.10	F	1040	13.25	12.72	5	3.25	Own	Own	C	Si	700	Don	Pur	Pur		Own	Ha	47 1/8	27 1/4	47 1/8	37
1.41— .532	AA	6.44	6.25	3	2	1.50-3.71	F	1040	11.00	9.34	7	3.56	Own	Own	C	Si	700	Don	Pur	Pur		Own	Ha	56 1/8	28 1/8	44 1/2	38
1.53— .532	AA	6.19	7.36	4	2	1.62-4.10	F	1040	13.25	12.72	7	3.50	Own	Own	C	Si	700	Don	Pur	Pur		Own	Ha	60 1/4	29 1/4	49 1/4	39
1.87— .625	AA	7.50	12.75	3	2	1.87-4.99	F	1040	13.25	16.73	7	4.12	Own	Own	C	Si	700	Don	Pur	Pur		DR	GS	70	30 1/2	54 1/8	40
1.12— .375	Alu	4.84	4.00	4	2			CNM	8.00	5.31	2		AB	AB	C	Pi	1650	AC	Pur	DeL		DR	Ele	41 1/8	23	30 1/8	41
1.12— .375	Alu	4.84	4.00	4	2			CNM	8.00	5.31			AB	AB	C	Pi	1650	AC	Pur	Pur		DR	Ele	47 1/8	22 1/2	33	42
1.12— .375	Alu	4.84	3.56	4	2			CNM	8.00	5.31			AB	AB	C	Pi	1650	AC	Pur	Pur		DR	Ele	54 1/2	22 1/2	33	43
1.37— .395	Alu	6.84	7.09	4	2			CNM	9.37	8.59			AB	AB	C	Pi	1650	AM	Pur	Pur		DR	Ele	60 1/8	27 1/8	37 1/2	44
1.62— .500	Alu	7.53	12.39	4	2	2.00-4.65	F	CNM	12.00	13.75			AB	AB	C	Pi	2000	AM	Pur	Pur		DR	Ele	66 1/8	34 1/8	54 1/8	45
1.28— .380	Alu	5.50	5.75	4	1	1.50-3.75	F	1045	8.50	5.37	4	2.37	AB	AB	C	Si	2000	Don*	AC	Brg*	43	Own	Ha	40 1/4	20	33 1/2	46
1.28— .380	Alu	5.50	5.75	4	1	1.50-3.75	F	1045	8.50	5.37	5	2.37	AB	AB	C	Si		Don*	AC	Brg*	43	Own	Ha	46 1/8	23	36 1/2	47
1.50— .418	AA	5.29	4.75	3	2	1.43-3.64	F	CNM	10.50	5.80	7	3.50	AB	AB	C	Pi	1700	Vor	Pur	WGB	45	LN	Ele	49.34	28.25	34.06	48
1.68— .500	AA	5.62	6.50	3	2	1.62-4.21	F	CNM	11.25	7.70	7	4.00	AB	AB	C	Pi	1700	Vor	Pur	WGB	45	LN	Ele	55.93	31.28	46.28	49
1.68— .500	AA	5.62	6.50	3	2	1.62-4.21	F	CNM	11.25	7.70	7	4.00	AB	AB	C	Pi	1700	Vor	Pur	WGB	45	DR	Ele	49.87	36.50	44.12	50
1.62d—.500	GI	7.75	21.9	4	2	2.12-4.73	F	1035	12.50	14.7	5	4.00	Own	Own	C	Mu	1500	Don	Own	Own	50	DR	Ele	57 1/4 (2)	37	55 1/8 ‡‡	51
1.62d—.500	GI	7.75	21.9	4	2	2.12-4.73	F	1035	12.50	14.7	7	4.00	Own	Own	C	Mu	1500	Don	Own	Own	50	DR	Ele	75 (2)	37	60 1/8	52
1.62d—.500	GI	7.75	21.2	4	2	2.12-4.98	F	1035	12.50	14.7	7	4.00	Own	Own	C	Mu	1500	Don	Own	Own	50	DR	Ele	77 1/2 (2)	42 1/2	55 1/2 ‡‡	53
1.62d—.500	GI	7.75	23.3	4	2	2.12-4.98	F	1035	12.50	14.7	7	4.00	Own	Own	C	Mu	1500	Don	Own	Own	50	DR	Ele	76 1/2 (2)	37	60 1/2	54
1.62d—.500	GI	7.75	23.3	4	2	2.12-4.98	F	1035	12.50	14.7	5	4.00	Own	Own	C	Mu	1500	Don	Own	Own	50	DR	Ele	57 1/4 (2)	37	55 1/8 ‡‡	55
1.12— .375	Alu	4.84	4.47	4	2	1.18-3.70	F	CNM	8.00	5.31	5	3.00	AB	AB	C	Pi	1650		Pur	Pur	45	LN	Ele	50 1/8	28 1/4	35 1/8	56
1.25— .453	CI	5.12	4.30	3	1	1.12-3.06	F	1045	8.75	3.56	3	2.62	AB	Hes	D	Mu	750		Mic	Mic		DR	Ele	48 1/8	24	33 1/8	57
1.50— .450	CI	5.96	6.00	3	1	1.31-4.06	F	1045	10.50	5.30	3	2.37	AB	Hes	O	Mu	750		Mic	Mic	50	AL	Ele	52 1/8	21 1/4	38 1/8	58
1.37— .469	Alu	6.50	4.00	3	1	1.37-3.87	F	1045	10.25	5.31	7	3.25	AB	Hes	D	Mu	750		Mic	Mic	50	DR	Ele	78 1/8	29	41 1/8	59
1.81— .531	Alu	7.25		4	2	1.87-4.50	F	4145	11.75		7	4.25	AB	AB	C	Pi	2000	Opt	Com	Mic	50	DR	Ele				60
2.00— .656	Alu			3	2	2.18-5.37	F	4145	13.25		7	4.75	AB	AB	C	Pi	2000	Opt	Com	Mic	50	DR	Ele				61
1.12— .375	Alu	4.84	4.47	4	2	1.18-3.70	F	CNM	8.00	5.31	5	3.00	AB	AB	C	Pi	1650	AC	Pur	Pur	45	DR	Ele	46 1/8	24 1/4	22 3/4	62
1.12— .375	Alu	4.84	3.56	4	2	1.18-3.20	F	CNM	8.00	5.31	7	3.00	AB	AB	C	Pi	1650	AC	Pur	Pur	45	DR	Ele	53 1/8	24 1/4	22 3/4	63
1.09— .209	CI	3.81	2.26	3	2	1.06-2.50	F	1035	8.00	1.85	2	2.00	Own	Own	O	Si	1	AM	AC	Fra	40	AL	E-H	18 1/4	20 3/4	28 1/2	64
1.37— .313	CI	5.46	6.20	3	2	1.50-4.00	F	1035	10.87	6.60	2	2.75	Own	Own	O	Si	1	AM	Fra	Fra	40	AL	Opt	23	23	38	65
1.37— .313	CI	5.93	6.20	3	2	1.50-4.00	F	1035	10.87	6.60	3	2.75	Own	Own	O	Si	1	AM	Fra	Fra	40	AL	Opt	30	23	38	66
1.37— .313	CI	5.31	6.20	3	2	1.50-4.00	F	1035	10.87	6.60	4	2.75	Own	Own	O	Si	1	AM	Fra	Fra	40	AL	Ele	35	23	38	67
1.37— .313	CI	5.46	6.20	3	2	1.50-4.00	F	1035	10.87	6.60	7	3.18	Own	Own	O	Si	1	AM	Fra	Fra	40	AL	Ele	50	24	40	68
2.37— .525	Alu	10.25	30.59	3	2	3.00-6.93	F	1040	18.00	46.05	7	6.00	BB	BB	C		3000	Opt	Win	Mic	50	LN	A-EI				69
2.37— .525	Alu	10.25	30.59	3	2	3.00-6.93	F	1040	18.00	46.05	7	6.00	BB	BB	C		3000	Opt	Win	Mic	50	LN	A-EI				70
2.37— .525	Alu	10.25	30.59	3	2	3.00-6.93	F	1040	18.00	46.05	9	6.00	BB	BB	C		3000	Opt	Win	Mic	50	LN	A-EI				71
2.37— .525	Alu	10.25	30.59	3	2	3.00-6.93	F	1040	18.00	46.05	9	6.00	BB	BB	C		3000	Opt	Win	Mic	50	LN	A-EI				72
1.81— .536	CI	8.00	15.00	3	2	2.12-4.50	F	1040	14.25	19.11	5	4.50	AB	AB	C	Pi	1600	Bur	Del	Com	50	LN	Ele				73
1.81— .536	CI	8.00	15.00	3	2	2.12-4.50	F	1040	14.25	19.11	7	4.50	AB	AB	C	Pi	1600	Bur	Del	Com	50	LN	Ele				74
1.81— .536	CI	8.00	15.00	3	2	2.12-4.50	F	1040	14.25	19.11	9	4.50	AB	AB	C	Pi	1600	Bur	Del	Com	50	LN	Ele				75
1.25— .453	CI	5.12	3.60	3	1	1.12-3.06	F	1045	8.75	3.56	3	2.62	AB	Hes	O	Mu	750	Opt	Mic	Mic		Opt	E-H	33 1/8	21 1/4	38 1/4	76
1.25— .453	CI	5.12	4.30	3	1	1.12-3.06	F	1045	8.75	3.56	3	2.62	AB	Hes	O	Mu	750	Opt	Mic	Mic		Opt	E-H	33 1/8	21 1/2	38 1/4	77
1.50— .450	CI	5.96	6.00	3	1	1.31-4.06	F	1045	10.50	5.31	3	2.37	AB	Hes	O	Mu	750	Opt	Mic	Mic		Opt	E-H	39 1/8	25 3/4	34 1/8	78
1.18— .382	CI	4.18		3	1	1.25-3.00	F	1045	6.75		4	2.62	AB	AB	C	Pi	1500	Opt	Fra	Mic	45	Opt	Ele	42 1/2	22	29 1/2	79
1.37— .469	Alu	6.50	3.75	3	1	1.37-3.62	F	1045	10.25	5.31	7	3.25	AB	Hes	O	Mu	750	Opt	Mic	Mic		Opt	Ele	80 1/8	21 1/4	41 1/4	80
1.37— .469	Alu	6.50	4.00	3	1	1.37-3.87	F	1045	10.25	5.31	7	3.25	AB	Hes	O	Mu	750	Opt	Mic	Mic		Opt	Ele	80 1/8	21 1/4	41 1/4	81
1.81— .531	Alu	7.25		4	2	1.87-4.50	F	4145	11.75		7	4.25	AB	AB	C	Pi	2000	Opt	Com	Mic	50	DRW	E-G	55 1/4	23 1/4	46 1/4	82

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AUTOMOTIVE DIESEL AND OTHER

Line Number	ENGINE MAKE AND MODEL	Built Under License from	GENERAL																VALVES	
			Designed for	Type	Number of Cylinders Bore and Stroke (In.)	Cylinder Liners—Type	Cycle	Piston Displacement (Cu. In.)	With Bare Engine: Maximum Brake Hp. at Specified R.P.M.	With Standard Accessories: Max. Intermittent Hp. at Specified R.P.M.	With Standard Accessories: Continuous Sustained Hp. at Specified R.P.M.	Compression Ratio—to 1	Max. Combustion Pressure (Lb. per Sq. In.)	B.M.E.P. at Continuous Hp. (Lb. per Sq. In.)	Weight per Continuous Hp. (Lb.) ♣	Max. Torque in Lb. Ft. at Specified R.P.M.	Shipping Weight (Lb.): Automotive or Industrial	Shipping Weight (Lb.): Marine	Arrangement	Intake Port Diameter and Lift (In.)
1	Waukesha—cont.																			
2	.....(13) 145HK	Hes	I	DI	6–5¼x6	W	4	779	174–2000	148–2000	106–1400	5.60	500	77	17.6	559–900	1885	.....	VI	1.87–.394
3	.....(14) 6WAKH	Hes	I	DI	6–6¼x8½	W	4	1197	202–1800	162–1600	139–1300	5.20	500	71	23.0	811–700	3200	.....	VI	2.37–.958
4	.....6WAKD	.....	TJ	TC	6–6¼x8½	W	4	1197	225–1600	185–1600	152–1300	16.5	750	83	22.3	845–900	3400	.....	VI	2.37–.958
5	.....(14) 6NKH	Hes	I	DI	6 7x8½	W	4	1962	226–1050	187–1050	160–950	5.42	500	68	38.8	1350–650	6200	.....	VI	2.50–.713
6	.....(14) 6LRH	Hes	I	DI	6–8½x8½	W	4	2894	333–1050	277–1050	225–900	5.43	500	68	47.8	1830–550	10750	.....	VI	3.25–.756
6	.....6LRD	.....	I	TC	6–8½x8½	W	4	2894	386–1050	336–1050	338–900	15.00	800	110	.....	2150–600	12000	.....	VI	3.75–.704

ABBREVIATIONS

*—Without fan or muffler.
♣—Based on automotive or industrial weight.
‡—With full equipment but without radiator or fan.
°—Supercharged.
§—As mounted in chassis (tilted 18°).
°—Includes structural steel mounting base and reduction gears weight.
•—Includes muffler.
▲—To Propeller shaft flange.
▼—Optional.
△—15 or 19.
••—To top of valve cover.
♦—Includes Radiator.
▼—Includes reverse and reduction gear.
‡‡—Bottom of base to highest point on engine.
(1)—Lister-Blackstone, Inc.
(2)—Fan to flywheel housing.
(3)—To top of water outlet (highest point).
(4)—Also built in 5, 7 and 8 cyl. models.
(8)—Air, electric.
(11)—Includes radiator.
(12)—From bottom of pan to air cleaner mounting flange.
(13)—Automotive power ratings.
(14)—Industrial power ratings.
(15)—Including radiator and gear box.
A—Air.
(a)—Excello 1500-Bosch 1800.
AA—Aluminum Alloy.
AB—American Bosch.
AC—Air chamber.
AC—AC Spark Plug Co.
ACB—AC or Bosch.
A-E—American Bosch or Ex-Cell-O Corp.
AEG—Air, electric or auxiliary gasoline engine.
A-El—Air or Electric.
AL—Electric Auto-Lite Co.
Alu—Aluminum.
AM—Air-Mase Corp.
AS—Air Silencer.
AT—Arma Steel, tin plated.
B—Buses.
BB—Bendix or Bosch.
B-P—Bosch or Purolator.
Brg—Briggs Clarifier Co.
Bur—Burgess.
C—Cars.
C—Closed.
CS—Primary, Cuno; Secondary, Bosch.
CI—Cast Iron.
Com—Commercial Filters Corp.

BRITISH COMMERCIAL

Line Number	MAKE AND MODEL	Type	Number of Crew	Number of Passengers Seated	FUEL: Capacity (Gal.)	FUEL: Octane Recommended	Oil Capacity (Gal.)	ENGINE: Make and Model	ENGINE: Number Used	Total Take-off Hp. at Specified R.P.M.	PROPELLERS: Make	PROPELLERS: Type	PROPELLERS: Diameter (Ft. and In.)	PROPELLERS: Number of Blades	DIMENSIONS (Ft. and In.): Span	Overall Length	Height (Taxi Position)	Wing Area (Gross) Sq. Ft.	Aileron Area (Sq. Ft.)
1	Airspeed . . AS-Consul Convertible	PC-L	2	5	15¢♣	87	1½♣	A-S . . . . . Cheetah X	2	790–2450	FR	Fxd	8' 0"	2	53' 4"	35' 4"	11' 1"	348	12.8
2	. . . . . AS65-Consul Ambulance	PL	2	4	15¢♣	87	1½♣	A-S . . . . . Cheetah X	2	790–2450	FR	Fxd	8' 0"	2	53' 4"	35' 4"	11' 1"	348	12.8
3	. . . . . AS65-Consul	PL	2	5–6	15¢♣	87	1½♣	A-S . . . . . Cheetah X	2	820–2300	FR	Fxd	8' 0"	2	53' 4"	35' 4"	11' 1"	348	12.8
4	. . . . . AS57-Ambassador	PL	6	23–48	100¢♣	100/130	2½♣	Bristol . . . . . Centaurus	2	5200–2700	DH	Cs-Fr	16' 0"	4	115' 0"	80' 9"	18' 10"	1250	89.8
6	Armstrong-Whitworth AW-55	TL	4	24–31	990¢		3.6	A-S . . . . . Mamba Jet	4	4560–15000‡	DH	Cs-Fr	10' 0"	3	92' 0"	70' 11"	25' 1"	986	64.5
6	Auster Arrow-J2	PL	1	1	18♣	73	1	Cont. C75	1	75–2275	AC	Fxd	6' 0"	2	36' 0"	22' 0"	6' 6"	185	18.0
7	. . . . . Autocrat-J1	PL	1	2	15♣	73	1	. . . . . Cirrus Minor	1	90–2200	AC-FR	Fxd	6' 0"	2	36' 0"	23' 8"	6' 8"	185	18.0
8	. . . . . Avis-P	PC-L	1	3	34♣	80	3	. . . Gypsy Major-X145	1	135–2200	AC	Fxd	6' 10"	2	36' 4"	23' 8"	6' 8½"	185	18.0
9	Christen . . Super Ace-CH3 Series II	PL	1	3	"25¼♣	80	4♣	D-H . . . Gipsy Major 10	1	145–2400	AC-HR	Fxd	(n)	2	36' 0"	21' 8"	7' 7½"	177	18.4
10	De Havilland Dove-DH104	PL-S	2	8–11	168♣	100	12	DH . . . . . Gipsy Queen	2	690–2800	DH	Cs-Fr	. . . .	3	57' 0"	39' 4"	. . . . .	335	22
11	Handley Page . . . . . Hermes IV	PL	7	40–63	3802	115	157	Bristol . . . . . Her. 763	4	8400–2900	DH	Cs-Fr	13' 0"	4	113' 0"	86' 10"	29' 11"	1408	98.0
12	. . . . . Hermes V	PL	7	40–63	3802	. . . .	57.6	Bristol . . . . . Theseus	4	9590–8200	DH	Cs-Fr	13' 0"	4	113' 0"	86' 10"	29' 11"	1408	98.0
13	. . . . . M60-MKI	PL	2	14–22	220	100	24	DH . . . Gipsy Queen 70	4	338–2800	DH	Cst-Rev	7' 6"	3	65' 0"	52' 1"	13' 6"	498	31.5
14	Saunders-Roe SR-45	PFB		100+	. . . .	Kero	. . . .	Bristol . . . . . Proteus	10	35000	. . . . .	CTR	. . . . .	. . . .	220' 0"	148' 0"	5113	. . . . .	. . . . .
15	Scottish Aviation . . . . Prest. Pioneer	PL	1	3	50.0♣	87	4♣	DH . . . . . Gipsy Queen	1	250–2500	DH	Cst	7' 6"	2	49' 9"	34' 9"	9' 9½"	390	34.8
16	. . . . . SAA2-MKII	PL	1	4	50♣	87	5.5♣	AW . . . . . Cheetah 25	1	475–2700	Rot	Cst	8' 3"	2	52' 9"	34' 0"	10' 1"	410	38.7
17	. . . . . SAA2-MKIII	PL	1	4	50♣	87	5.5♣	Alvis . . . . . Leonides	1	520–3000	Rot	Cst	9' 0"	3	52' 9"	34' 0"	10' 1"	410	38.7
18	Vickers-Armstrong . . . . . Valetta	PC-L	4	36	840♣	100	31	Bristol . . . . . Herc. 730	2	1975–2800	Rot	Cst	13' 3"	4	89' 3"	65' 2"	19' 0"	882	26.8♦

ABBREVIATIONS

♣—Each.
*—With aux. tank—550 miles.
▼—Over prop. in taxi position.
♣—Imperial gallons.
°—With Flaps down.
†—Includes 4 passengers and full luggage
‡—Includes 5 passengers and full luggage.
•—Includes 6 passengers and full luggage.
‡—Shaft Hp. plus 320 lbs. Jet Thrust per engine
§—Gallons instead of pounds.
▼—36 gal. long range.
(d)—Dual.
(n)—Dia. AC, 6' 10"; HR is 6' 4".
AC—Airscrew Co., Ltd.
CL—Cargo land plane.
Cnt—Controllable.
Cont—Continental Motors.
Cst—Constant speed.
Cs-Fr—Constant speed, full feathering and reversing.
CTR—Contra-Rotating.

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HEAVY OIL ENGINES—*Concluded*

VALVES	PISTONS					PISTON PIN		CONNECTING RODS			MAIN BEARINGS		INJECTION SYSTEM									STARTING METHOD		OVERALL DIMENSIONS			
Exhaust Port Diameter and Lift (In.)	Material	Length (In.)	Weight with Rings and Pin (Lb.)	No. of Compression Rings	No. of Oil Rings	Diameter and Length (In.)	Locked In—	Material (S. A. E. No.)	Center to Center Length (In.)	Weight with Cap and Bushing (Lb.)	Number	Diameter (In.)	Make of Pump	Make of Valve	Valve Type—Open or Closed	Orifices	Pressure—Nozzle Opening (Lb. per Sq. In.)	Air Cleaner—Make	Fuel Filter—Make	Lubricant Filter—Make	Minimum Recommended Cetane Number of Fuel	Make	Type	Length—Fan to Flywheel (In.)	Width (In.)	Height—To Top of Air Cleaner (In.)	Line Number
1.37—.531	Alu	7.25	6.44	3	1	1.62-4.87	F	1045	11.75	8.31	7	3.50	AB	Hes	O	Mu	750	Opt	Mic	Mic	....	Opt	Ele	55 1/4	25 1/4	46 1/16	1
2.00—.656	Cl	8.37	11.00	3	1	1.87-5.50	F	1045	13.25	12.20	7	4.00	AB	Hes	O	Mu	750	Opt	Mic	Mic	....	Opt	E-G	65 1/16	30 1/16	50 1/16	2
2.00—.656	Alu	3.37	....	3	2	2.18-5.37	F	4145	13.25	....	7	4.75	AB	AB	C	Pi	2000	Opt	Com	Mic	50	DRW	E-G	65 1/16	30 1/16	50 7/16	3
2.25—.710	Cl	9.25	24.75	3	1	2.00-6.00	F	1045	15.37	19.80	7	3.75	AB	Hes	O	Mu	750	Opt	Mic	HC	....	Opt	E-G	78	32 1/16	57 1/16	4
2.75—.840	Cl	11.65	50.00	4	1	2.25-7.75	F	1045	20.87	34.70	7	4.25	AB	Hes	O	Mu	1000	Opt	Mic	HC	....	Opt	E-G	95 1/16	46 1/2	65 1/16	5
2.75—.704	Cl	11.34	67.50	4	2	3.00-7.00	F	4145	21.37	40.00	7	5.50	AB	AB	C	Pi	....	Vor	Com	HC	45	Own	G	98	47	66	6

CNM—Chrome-nickel molybdenum.
Cun—Cuno Engineering Corp.
D—Dry liners used.
DA—Delco-Remy and Auto-Lite.
DeL—DeLuxe Products Corp.
DI—Direct injection.
D-N—Delco-Remy or Novo.
Don—Donaldson Co.
DR—Delco-Remy Div.
DRW—Delco or Waukesha.
EAH—Air, Electric, or Hand.
EGA—Electric aux. gas engine or Hand.
E-G—Electric or auxiliary gasoline engine.
E-H—Electric or hand.
Ele—Electric.
F—Floating.
Fra—Fram oil filter.
G—Auxiliary gasoline engine, electric optional.
GI—Grey Iron Casting.
G. M. Corp.—General Motors Corp.
GS—Gasoline and spark ignition.
Ha—Hand.
HC—Homan-Crane Corp.
Herc—Hercules Motor Corp.
Hes—Hesselman.
I—Industrial.
HI—Horizontally In-head.
LB—Leece Neville or Buda.
L-D—Leece Neville or Delco-Remy.
LDA—Leece-Neville, Delco-Remy or Autolite.
LE—Lanova energy cell.
LN—Leece Neville Co.
Lyn—Lynite.
M—Marine.
Mic—Michiana Products Corp.
MW—Marine Work Boat.
N—No or none.
Mu—Multiple.
NI—Nickel Iron.
Nug—Nugent.
O—Open.
OP—Oilpure Refiner Co.
Opt—Optional.
PC—Precombustion chamber.
Pi—Pintle.
P-S—Purolator or Stewart-Warner.
Pur—Purolator Products, Inc.
R—Railcars.
Sh—Shaft torque; Shaft RPM.
Si—Single.
T—Trucks.
TC—Turbulence chamber.
Tr—Tractors.
Uni—United Air Cleaner Div.
VI—Vertically In-Head.
V2—Vertically in head, 2 inlets used.
Ver—Vertex.
W—Wet liners used.
Vwg—Varies with gear.
WGB—W.G.B. Oil Clarifier, Inc.
Win—Winslow Filter.

AND PRIVATE AIRCRAFT

WEIGHTS (Lb.)							PERFORMANCE									MAIN LANDING GEAR							
																		Auxiliary Gear					
Empty	Gross	Gross Landing	Pay Load	Useful Load	Wing Loading (Lb. per Sq. Ft.)	Power Loading (Lb. per Hp.)	Maximum Speed at Altitude	Cruising Speed at Altitude	Fuel Consumption at Cruising Speed (Lb. per Hr.)	Range in Miles at Cruising Speed	Stalling Speed at Sea Level (m.p.h.)	Initial Climb (Ft. per Min.)	Service Ceiling with Normal Load (Ft.)	Take-off Distance (Over 50 ft. obstacle no wind) (Ft.)	Landing Distance (Over 50 ft. obstacle no wind) (Ft.)	Retractable	Method of Retraction	Tail or Nose Wheel	Retractable	Type	Tread (Ft., In.)	Brake Type	Line Number
6150	8250	8250	1250‡	2470	23.7	10	190-4800	145-10000	88	920	69*	1180	18700	1440	825	Y	Hyd	Tail	Y	Swi	15' 6"	Pne	1
6400	8250	8250	940‡	2470	23.7	10	190-4800	145-10000	88	920	69*	1180	18700	1440	825	Y	Hyd	Tail	N	Swi	15' 6"	Pne	2
6050	8250	8250	1420*	2650	23.7	10	190-4800	145-10000	88	920	69*	1180	18700	1440	825	Y	Hyd	Tail	N	Swi	15' 6"	Pne	3
34843	52800	50000	11135	17060	43.3	9.6	.....	240-20000	886	1150	88*	1450	35000	3900	2550	Y	Hyd	Nose	Y	St-L	27' 6"	Disc	4
23310	39500	34000	7500	16190	40.0	8.74	345-20000	305-20000	1370	1500	75*	2100	35000	2700	3300	Y	Hyd	Nose(d)	Y	Sto	17' 9"	Hyd	5
672	1450	1450	244	244	7.8	19.3	98-SL	87-SL	4 1/2	320	37	430	10000	1350	1350	N	.....	Tail	N	Swi	8' 0"	GCA	6
1062	1850	1850	438	438	10.0	18.5	120-SL	100-SL	4 1/2	320	38	568	14000	1350	1350	N	.....	Tail	N	Swi	6' 0"	GCA	7
1400	2550	2550	980	980	13.7	17.5	120-SL	100-SL	6.4	500	36	500	12000	1382	1200	N	.....	Tail	N	SS	6' 0"	GCA	8
1325	2350	2350	780	1025	13.25	16.20	127-SL	112-2000	47.1	400*	38	700	16500	1125	800	N	.....	Nose	N	Swi	.....	Hyd	9
5657	9500	9500	1185	2813	25.4	12.3	210-8000	179-8000	194	1135	72	850	20000	2370	2250	Y	Pne	Nose	Y	Swi	13' 9"	Pne	10
56137	82000	75000	17000	26863	58.2	9.2	357-20000	300-25000	2118	3310	105*	838	24900	4200	3480	Y	Hyd	Nose	Y	Sto	Ptn	Pne	11
50900	84000	75000	17100	33100	167.8	8.8	351-15000	340-30000	288	2820	106*	1950	29500	4808	3480	Y	Hyd	Nose	Y	Sto	Ptn	Pne	12
12420	18000	18000	4700	5580	36.1	13.3	232-6750	209-10000	495	632	77	883	19400	2522	2340	Y	Pne	Nose	Y	Sto	.....	Pne	13
.....	31500	.....	.....	.....	61.5	9.0	.....	380-36000	.....	5500	.....	.....	.....	.....	.....	Y	.....	.....	.....	.....	.....	.....	14
3214	4250	4250	640	1035	10.9	17.0	125-1000	110-6000	62	500	33	630	14000	960	540	N	.....	Tail	N	Swi	9' 8"	Hyd	15
3855	5015	5015	950	1360	12.6	10.8	160-4000	140-7000	117	425	35	1000	20000	540	675	N	.....	Tail	N	Swi	.....	Disc	16
3858	5015	5015	950	1360	12.6	9.9	173-4250	155-11750	147	425	35	1150	24000	480	675	N	.....	Tail	N	Swi	.....	Disc	17
23786	36500	35500	11000	12715	41.4	9.13	294-5000	210-10000	691	1650	83	1300	22200	3150	2775	Y	Hyd	Tail	Y	Swi	.....	Pne	18

DH—DeHavilland.
Ele—Electric.
FR—Fairey Reed propeller.
Fxd—Fixed.
GCA—Girling cable operated.
HR—Hordern-Richmond.
Hyd—Hydraulic.
Mec—Mechanical.
N—No or None.
PC-L—Passenger or Cargo, land plane.
PL—Passenger land plane.
PL-S—Passenger land or Seaplane.
Pne—Pneumatic.
Ptn—Patterned.
Rot—Rotol.
Rev—Reversible.
SS—Swivel, steering.
Ste—Steering.
St-L—Steering, lockable.
Swi—Swivel.
TL—Transport land plane.
Y—Yes.

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AMERICAN AIRCRAFT ENGINES

ENGINE MAKE AND MODEL	A. T. C. Number	GENERAL DATA: Arrangement	Cooling Medium	Number of Cylinders	Bore and Stroke (In.)	Total Piston Displacement (Cu. In.)	Compression Ratio (to —1)	B.M.E.P. at Maximum Hp. (Lb. per Sq. In.)	Blower Ratio	Cylinder Material	No. of Valves per Cylinder: Intake	Exhaust	Valve Arrangement	RATINGS: Maximum (Except Take-off): Horsepower	R. P. M.	At Sea Level or Altitude (FL)	Take-off: Horsepower	R. P. M.	Cruising: Horsepower	R. P. M.	Octane Rating of Fuel Required	Propeller Drive Ratio (to —1)	Weight (Lb.): Engine Dry—Without Hub or Starter	Per Maximum Hp. (Except Take-off)	Carburetor: Number Used and Make	Type	Ignition System—Make	Starting: Make	Method	Installation Dimensions (Overall—Ins.): Length	Height or O. D.	Width	Height above Engine Bed	Diameter Mounting Ring or Distance Between Bearers
Cameron C4-1-E-1		IL	Air	4	4⅜x4½	301.0	7.00	132		(2)	1	1	Ho	125	2500	SL	130	2650	110	2200	80	D	175	1.40	1-SM	FL			E-M	45	25¼	14¼	6⅞	13¼
Continental A65-8F	205	Hor	Air	4	3⅞x3½	171.0	6.30	131	No	(5)	1	1	In	65	2300	SL	65	2300	53	2150	73	D	170	2.62	1-Str	FL	Eis	DR	E-M	30½	20⅞	31½		♦
A65-12F	205	Hor	Air	4	3⅞x3½	171.0	6.30	131	No	(5)	1	1	In	65	2300	SL	65	2300	53	2150	73	D	175.6	2.70	1-Str	FL	Scin	DR	E-M	30½	20⅞	31½		♦
C75-12F	233	Hor	Air	4	4⅛x3⅝	188.0	6.30	139	No	(5)	1	1	In	75	2275	SL	75	2275	58	2275	73	D	182	2.43	1-Str	FL	Scin	DR	E-M	32 ◀	21½	31½		♦
C85-12F	233	Hor	Air	4	4⅛x3⅝	188.0	6.30	139	No	(5)	1	1	In	85	2575	SL	85	2575	63	2400	73	D	182	2.14	1-Str	FL	Scin	No	na	32	21½	31½		♦
C85-8FJ	233	Hor	Air	4	4⅛x3⅝	188.0	6.30	139	No	(5)	1	1	In	85	2575	SL	87	2650	63	2400	73	D	182	2.14	**		Scin	DR	E-M	32 ▮	21½	31½		♦
C90-12F, 12FJ	252	Hor	Air	4	4⅛x3⅞	200.9	7.00	143	No	(5)	1	1	In	90	2475	SL	95	2625	68	2350	80	D	188	2.09	1-Str	FL	Scin	DR	E-M	31.26	28⅛	31½		♦
C115-2	236	Hor	Air	6	4⅛x3⅝	282.0	6.30	138	No	(5)	1	1	In	115	2350	SL	115	2350	90	2200	73	D	257	2.23	1-MS	FL	Scin	DR	E-M	39¼	23¼	31½		
C125-2	236	Hor	Air	6	4⅛x3⅝	282.0	6.30	138	No	(5)	1	1	In	125	2550	SL	125	2550	98	2400	73	D	257	2.05	1-MS	FL	Scin	DR	E-M	39¼	23¼	31½		
C145-2	236	Hor	Air	6	4⅛x3⅝	301.0	7.00	135	No	(5)	1	1	In	145	2700	SL	145	2700	109	2450	80	D	258	1.78	1-MS	FL	Scin	DR	E-M	36¼	27¼	31½		
△*E165-2	246	Hor	Air	6	4x5	471.0	7.00	135	No	(5)	1	1	In	165	2050	SL	165	2050	115	1825	80	D	351	2.12	1-MS	FL	E-Sc	DR	E-M	11.31	25.63	33.39		
△E165-3	246	Hor	Air	6	4x5	471.0	7.00	135	No	(5)	1	1	In	165	2050	SL	165	2050	115	1825	80	D	352	2.13	1-Str	PI	E-Sc	DR	E-M	16.70	25.63	33.39		
△E165-4	246	Hor	Air	6	4x5	471.0	7.00	135	No	(5)	1	1	In	165	2050	SL	165	2050	115	1825	80	D	344	2.08	1-Str	PI	E-Sc	DR	E-M	16.70	22.28	33.39		
△*E185-1	246	Hor	Air	6	4x5	471.0	7.00	135	No	(5)	1	1	In	185	2300	SL	185	2300	130	2050	80	D	344	2.08	1-Str	PI	E-Sc	DR	E-M	16.70	22.28	33.39		
△*E185-2	246	Hor	Air	6	4x5	471.0	7.00	135	No	(5)	1	1	In	185	2300	SL	185	2300	130	2050	80	D	351	2.13	1-MS	FL	E-Sc	DR	E-M	11.31	25.63	33.39		
△*E185-3	246	Hor	Air	6	4x5	471.0	7.00	135	No	(5)	1	1	In	185	2300	SL	185	2300	130	2050	80	D	352	2.13	1-Str	PI	E-Sc	DR	E-M	16.70	25.63	33.39		
△*E185-5	246	Hor	Air	6	4x5	471.0	7.00	135	No	(5)	1	1	In	185	2300	SL	185	2300	130	2050	80	D	343	2.08	1-Str	PI	E-Sc	DR	E-M	11.31	22.28	33.39		
W670-23	162	Rad	Air	7	5½x4⅜	667.8	6.10	130	No	(5)	1	1	In	240	2200	SL	240	2200	175	2000	80	D	519	2.16	1-BS	FL	Scin			34⅛	42¼	42¼		
Franklin 4A4-75-A3	239	Hor	Air	4	4½x3½	225.0	6.50	129	No	(6)	1	1	In	75	2050	SL			51	1870	73	D	214	2.85	1-MS	FL	Eis	AL	E-M	30½	20½	30½	12½	
4A4-85-A3	239	Hor	Air	4	4½x3½	225.0	6.50	127	No	(6)	1	1	In	85	2350	SL			64	2140	73	D	214	2.51	1-MS	FL	Eis	AL	E-M	30½	20½	30½	12½	
4A4-95-A3	239	Hor	Air	4	4½x3½	225.0	6.50	129	No	(6)	1	1	In	95	2600	SL			71	2380	73	D	214	2.25	1-MS	FL	Eis	AL	E-M	30½	20½	30½	12½	
4A4-75-B3	239	Hor	Air	4	4½x3½	225.0	7.00	135	No	(6)	1	1	In	75	1950	SL			51	1775	80	D	214	2.85	1-MS	FL	Eis	AL	E-M	30½	20½	30½	12½	
4A4-85-B3	239	Hor	Air	4	4½x3½	225.0	7.00	136	No	(6)	1	1	In	85	2200	SL			64	2000	80	D	214	2.51	1-MS	FL	Eis	AL	E-M	30½	20½	30½	12½	
4A4-100-B3	239	Hor	Air	4	4½x3½	225.0	7.00	136	No	(6)	1	1	In	100	2600	SL			75	2370	80	D	214	2.14	1-MS	FL	Eis	AL	E-M	30½	20½	30½	12½	
6A4-125-A3	238	Hor	Air	6	4½x3½	335.0	6.50	134	No	(6)	1	1	In	125	2200	SL			94	2030	73	D	291	2.32	1-MS	FL	Eis	DR	E-M	37½	22½	30½	13½	
6A4-135-A3	238	Hor	Air	6	4½x3½	335.0	6.50	130	No	(6)	1	1	In	135	2450	SL			101	2230	73	D	291	2.15	1-MS	FL	Eis	DR	E-M	37½	22½	30½	13½	
6A4-145-A3	238	Hor	Air	6	4½x3½	335.0	6.50	132	No	(6)	1	1	In	145	2600	SL			109	2370	73	D	291	2.00	1-MS	FL	Eis	DR	E-M	37½	22½	30½	13½	
6A4-130-B3	238	Hor	Air	6	4½x3½	335.0	7.00	130	No	(6)	1	1	In	130	2200	SL			98	2000	80	D	291	2.23	1-MS	FL	Eis	DR	E-M	37½	22½	30½	13½	
6A4-140-B3	238	Hor	Air	6	4½x3½	335.0	7.00	140	No	(6)	1	1	In	140	2375	SL			105	2160	80	D	291	2.07	1-MS	FL	Eis	DR	E-M	37½	22½	30½	13½	
6A4-150-B3	238	Hor	Air	6	4½x3½	335.0	7.00	136	No	(6)	1	1	In	150	2600	SL			113	2370	80	D	291	1.89	1-MS	FL	Eis	DR	E-M	37½	22½	30½	13½	..
6V4-178-B3	244	Ver	Air	6	4½x3½	335.0	7.00	140	No	(6)	1	1	In	178	3000	SL					80	D	294	1.65	1-MS	FL	Scin	DR	E-M	36	26	30		
6V4-165-B3F		Ver	Air(a)	6	4½x3½	335.0	7.00	130	No	(6)	1	1	In	165	3000	SL					82	D	339	2.05	1-Str	FL	Scin	DR	E-M	40½	29	30		
6A4-165-B3	238	Hor	Air	6	4½x3½	335.0	7.00	139	No	(6)	1	1	In	165	2800	SL			124	2550	80	D	307	1.86	1-MS	PI	Scin	DR	E-M	37½	25⅛	30	13½	
6V4-200-C32	244	Ver	Air	6	4½x3½	335.0	8.50	152	No	(6)	1	1	In	200	3100	SL					91	D	306	1.53	1-BM	P-FL	Scin	DR	E-M	28½	33	30½		
6AG4-185-B13		Hor	Air	6	4½x3½	335.0	7.60	141	No	(6)	1	1	In	190	3100	SL					80	.632	324	1.11	1-BM	P-FL	Scin	DR	E-M	40½	26	30½		
6V6-245-B16F	258	Ver	Air(a)	6	4⅞x4	425.0	7.50	140	No	(6)	1	1	In	245	3275	SL					80	D	321	1.31	1-Ben	PI	Scin	Opt	E-M	39	36½	33½		
6AB-225-B7		Hor	Air	6	5x4½	500.0	7.00	137	No	(6)	1	1	In	225	2600	SL			169	2370	80	D	382	1.69	1-MS	FL	Eis	DR	E-M	45½	29½	33½	21	
6AB-215-B9F	242	Hor	Air(a)	6	5x4½	500.0	7.00	136	No	(6)	1	1	In	215	2500	SL			161	2280	80	D	474	2.21	1-MS	FL	DR	DR	E-M	66½	26½	33½	21½	...
Jacobs O-240A		Hor	Air	4	4⅜x4	241.0	6.50	143	No	(5)	1	1	In	100	2300	SL	100	2300	75	2090	80	D	200	2.00	Opt	F-FI	Scin	DR	E-M	39.63	18.13	33.63		16
O-360A		Hor	Air	6	4⅜x4	361.0	6.50	151	No	(5)	1	1	In	165	2400	SL	165	2400	120	2160	80	D	300	1.82	Opt	F-FI	Scin	DR	E-M	47.44	18.13	33.60		16
R-755A	237	Rad	Air	7	5¼x5	757.0	6.00	143	No	(5)	1	1	In	300	2200	SL	300	2200	300	2000	80	D	505	1.68	1-Str	FL	Scin	Ecl	E-M	39.50	44			16½
R-755E		Rad	Air	7	5¼x5	757.0	6.50	146	No	(5)	1	1	In	350	2600	SL	350	2500	350	2250	91	.649	600	1.72	1-Str	FL	Scin	Ecl	E-M	42.34	44			16½
R-915A		Rad	Air	7	5½x5½	914.0	6.00	124	No	(5)	1	1	In	375	2300	SL	375	2300	375	2070	80	D	560	1.49	1-Str	FL	Scin	Ecl	EM	40.40	45.60			16½
Kinner K-5	3	Rad	Air	5	4⅜x5¼	372.0	5.10	118	No	(5)	1	1	In	100	1810	SL	100	1810	75	1610	73	1.00	304	3.04	1-SH	FL	Scin	Ecl	Opt	33.0	45½	..		14
B-5	51	Rad	Air	5	4⅜x5¼	441.0	5.25	116	No	(5)	1	1	In	125	1925	SL	125	1925	90	1725	73	1.00	312	2.49	1-SH	FL	Scin	Ecl	Opt	33.0	45½	..		14
B-54	51	Rad	Air	5	4⅜x5¼	441.0	5.25	116	No	(5)	1	1	In	125	1925	SL	125	1925	90	1725	73	1.00	312	2.49	1-SH	FL	Scin	Ecl	Opt	31.5	45½	..		14
R-5, Series 2	153	Rad	Air	5	5x5½	540.0	5.50	127	No	(5)	1	1	In	160	1850	SL	160	1850	115	1650	73	1.00	335	2.09	1-SH	FL	Scin	Ecl	Opt	33.1	45½	..		14
R-55	153	Rad	Air	5	5x5½	540.0	5.50	127	No	(5)	1	1	In	160	1850	SL	160	1850	115	1650	73	1.00	346	2.16	1-SH	FL	Scin	Ecl	Opt	33.6	45½	..		14
R-56	153	Rad	Air	5	5x5½	540.0	5.50	127	No	(5)	1	1	In	160	1850	SL	160	1850	115	1650	73	1.00	362	2.28	1-SH	FL	Scin	Ecl	Opt	33.6	45½	..		14

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SMALL GASOLINE ENGINES

MAKE AND MODEL		Designed for Use	Number of Cycles	ENGINE: Type	No. of Cylinders	Bore and Stroke (In.)	Total Displacement (Cu. In.)	Compression Ratio (to — 1)	Valve Location	Horsepower: Rated at RPM	Horsepower: Continuous at RPM	Torque - Lb. Ft. at RPM	Weight (Lb.)	GOVERNOR: Used	GOVERNOR: Type	Ignition System Type	FUEL SYSTEM: Type	FUEL SYSTEM: Make	Fuel Used	Starting Method
AIR COOLED ENGINES																				
Briggs & Stratton (1)	WI	GS,Co,Pu,Ha,Af,Lm	4	Ver	1	2x1 1/2	4.71	5.29	L	1.0-3200	.85-3200	1.6-3200	30	Y	Pn	Mag	Car	Own	G	HBP
	NS	Ha,Lm	4	Ver	1	2x2	6.28	5.86	L	1.3-3200	1.1-3200	2.1-3200	32	Y	Pn	Mag	Car	Own	G	HBP
	N	GS,Co,Ha,Pu,Af,Lm	4	Ver	1	2x2	6.28	5.86	L	1.9-3600	1.7-3600	2.8-3600	33	Y	Pn	Mag	Car	Own	G	HBP
	9	GS,Co,Pu,Re,Af	4	Ver	1	2 1/4x2 1/4	8.95	5.40	L	3.1-3200	2.6-3200	5.1-3200	63	Y	Me	Mag	Car	Own	G	HR
	14	GS,Co,Pu,Re,Af	4	Ver	1	2 5/8x2 5/8	14.21	5.40	L	5.1-3200	4.3-3200	8.4-3200	78	Y	Me	Mag	Car	Own	G	HR
	23	GS,Co,Pu,Re,Af	4	Ver	1	3x3 3/4	22.97	5.40	L	8.2-3200	7-3200	13.5-3200	101	Y	Me	Mag	Car	Own	G	HR
Clinton (2)	500	GS,Co,Ha,Pu,Af,Re	4	Ver	1	2x1 7/8	5.89	5.00	L	1.2-3600	1.2-3600	1.7-3600	35	Y	CA	Mag	Car	CC	G,K,D	PB
	700	GS,Co,Ha,Pu,Af,Re	4	Ver	1	2x1 7/8	5.89	5.60	L	1.7-3600	1.7-3600	2.5-3600	42	Y	Ce	Mag	Car	Cart	G,K,D	PB
	1100	GS,Co,Ha,Pu,Af,Re	4	Ver	1	2 5/8x1 7/8	8.30	6.10	...	3.0-3600	3.0-3600	4.38-3600	47	Y	Ce	Mag	Car	Cart	G,K,D	PB
Continental (3)	AA7	General Purpose	4	(a)	1	2 1/4x2	7.10	5.70	L	1.6-2800	1.5-2600	3.03-2600	40 1/2	Y	Av	Mag	Car	Zen	G	PB
	AA7B	General Purpose	4	(a)	1	2 1/4x2	7.10	6.00	L	2.18-3600	2.0-3400	3.0-3400	41	Y	Av	Mag	Car	Zen	G	PB
	AU7	General Purpose	4	(a)	1	2 1/4x2	7.10	5.70	L	1.6-2800	1.5-2600	3.03-2600	41	Y	Av	Mag	Car	.....	G	PB
	AU7B	General Purpose	4	(a)	1	2 1/4x2	7.10	6.00	L	2.18-3600	2.0-3400	3.0-3400	41	Y	Av	Mag	Car	.....	G	Hc
Cushman (4)	Husky-M6	GS,Co,Ha,Pu,Re,Af	4	Ver	1	2 5/8x2 3/4	12.30	4.70	L	3.0-3000	(b)	5.2-2000	65	Y	Fb	Mag	Car	Til	G	Rr
	Husky-M7	GS,Co,Ha,Pu,Re,Af	4	Ver	1	2 5/8x2 3/4	14.90	5.40	L	4.5-3000	(b)	7.9-2000	65	Y	Fb	Mag	Car	Til	G	Rr
	Husky-M8	GS,Co,Ha,Pu,Re,Af	4	Ver	1	2 7/8x2 3/4	17.80	5.90	L	5.0-3000	(b)	9.5-2000	65	Y	Fb	Mag	Car	Til	G	Rr
Erie (8)	2CH-1000	General Purpose	2	Hor	1	1 5/8x1 5/8	3.36	5.21	...	.8-3000	.75-2400	1.4-3000	18	Y	Fb	Mag	Car	Own	(c)	Rr
	2CV-1000	General Purpose	2	Ver	1	1 5/8x1 5/8	3.36	5.21	...	.8-3000	.75-2400	1.4-3000	18	Y	Fb	Mag	Car	Own	(c)	Rr
Gladden (5)	40	General Purpose	4	Ver	1	2 1/2x3	14.70	4.50	L	4.9-3200	4.9-3200	7.4-3200	73	Y	Fb	Mag	Car	MS	G,K	Bp
	40M	Marine	4	Ver	1	2 1/2x3	14.70	4.50	L	4.9-3200	4.9-3200	7.4-3200	73	Y	Fb	Mag	Car	MS	G,K	Hc
	AB	GS,Co,Ha,Pu,Re,Af	4	Hor	1	2 5/8x3	17.80	5.40	L	5.0-2600	5.0-2600	9.5-2500	75	Y	Av	Mag	Car	MS	G,K	Bp
	75	GS,Co,Ha,Pu,Re,Af	4	Ver	1	2 5/8x3	19.40	5.70	L	7.0-3200	7.0-3200	11.8-3200	75	Y	Fb	Mag	Car	MS	G,K	Bp
	75ES	General Purpose	4	Ver	1	2 5/8x3	19.40	5.70	L	7.0-3200	7.0-3200	11.8-3200	128	N	...	Bat	Car	MS	G	Elc
	75M	Marine	4	Ver	1	2 5/8x3	19.40	5.70	L	7.0-3200	7.0-3200	11.8-3200	70	Y	Fb	Mag	Car	MS	G,K	Hc
	75MES	Marine	4	Ver	1	2 5/8x3	19.40	5.70	L	7.0-3200	7.0-3200	7.4-3200	129	N	...	Bat	Car	MS	G	Elc
	MC	Automotive	4	Ver	1	2 5/8x3	19.40	7.50	L	9.0-4000	7.0-3000	12.3-3000	75	N	...	Mag	Car	Am	G	Pe
Homelite (18)	20	GS,Pu,CS,Bl	2	Ver	1	2 3/4x1 1/2	6.70	5.50	...	3.5-3600	3.0-3600	.....	20	Y	Va	Mag	Car	Til	G,K	Hc
	23	GS,Pu,Bl	2	Ver	1	2 1/4x2 1/2	8.40	5.50	...	4.0-3600	4.0-3600	.....	30	Y	Va	Mag	Car	Own	G,K	Hc
	24	GS,Co,Pu,CS,Bl	2	Ver	1	2 1/4x2 3/4	11.40	5.50	...	6.0-3600	6.0-3600	.....	40	Y	Va	Mag	Car	OZ	G,K	Hc
	25	GS,Co,Pu,CS,Bl	2	VO	2	2 5/8x2 1/2	22.80	5.50	...	10.0-3600	10.0-3600	.....	55	Y	Va	Mag	Car	Own	G,K	Hc
Jacobsen (6)	J100	Lm	2	Hor	1	2x1 1/2	4.70	5.50	...	1.25-3000	1.25-3000	2.25-3000	19 1/2	Y	Av	Mag	Car	Til	G	Rr
	J150	Lm	2	Hor	1	2 5/8x1 5/8	6.90	5.00	...	1.65-3000	1.65-3000	3.00-3000	35 1/2	Y	Av	Mag	Car	Til	G	Rc
Lauson (7)	LJ	GS	4	Ver	1	1 5/8x1 1/2	3.11	5.80	L	1.00-4400	.85-4400	1.20-4400	18	Y	Fb	Mag	Car	Til	G	Pl
	LMC	GS,Lm	4	Ver	1	1 5/8x1 1/2	3.11	5.90	...	1.05-3800	.75-3800	1.15-3800	22	Y	Fb	Mag	Car	.....	G	Bp
	RSC	GS,Co,Pu,Re	4	Ver	1	2x1 1/2	5.90	5.80	L	1.50-3600	1.25-3600	2.10-3600	33	Y	Fb	Mag	Car	Til	G	Pl
	TLC	GS,Co,Pu,Re	4	Ver	1	2 1/4x2 1/4	8.94	5.80	L	2.40-3200	2.00-3200	3.95-3200	52	Y	Fb	Mag	Car	Til	G	Pl
	PAC	GS,Co,Pu,Re,Af	4	Ver	1	2 1/4x2 3/4	17.85	5.00	L	4.90-2700	3.50-2700	8.50-2700	85	Y	Fb	Mag	Car	Til	G	Pl
McCulloch (9)	1200D	Lm,Pu	2	Hor	1	2x2	6.28	6.70	...	3.00-3500	2.5-2500	5.10-2500	24	Y	Pn	Mag	Car	Til	G	Bp
	1225B	CS	2	Hor	2	2 1/4x2	7.91	6.50	...	5.10-4200	4.4-3200	6.30-3000	25	N	...	Mag	Car	Own	G	Bp
Nova (10)	DA33	GS,Pu,Af,Ha,Co	4	Ver	1	3 1/4x4	33.10	5.80	L	8.50-2800	.....	18.6-1600	185	Y	Fb	Mag	Car	MS	G	Hc
Onan (11)	AAE	GS	4	Ver	1	2x2	6.28	5.50	L	.80-2100	.60-2100	2.0-2100	176	Y	:	Bat	Car	Zen	G	ER
	AH	GS,In	4	Ver	1	2 1/4x2 1/4	11.05	6.23	L	3.3-3000	2.6-3000	6.0-3000	55	Y	:	BM	Car	Zen	G	ER
	Com-1B	In	4	Ver	1	2 1/4x2 1/4	16.30	4.10	L	3.45-2400	2.7-2400	7.1-2400	124	Y	:	Mag	Car	Zen	NgG	ER
	1B	GS	4	Ver	1	2 1/4x2 3/4	16.30	6.80	L	2.50-1800	2.5-1800	7.3-1800	1177	Y	:	Mag	Car	Zen	NgG	Rr
	BH	GS,In	4	Op	2	2 1/4x2 1/4	22.10	6.23	...	6.70-3000	5.3-3000	12.0-3000	85	Y	:	BM	Car	MS	G	ER
	CK	GS,In,Re,InM	4	Op	2	3x2 3/4	38.80	6.20	L	10.1-3000	8.6-3000	18.0-3000	95	Y	:	BM	Car	MS	NgG	ER
	LK	GS,In	4	Ver	1	3x2 3/4	19.40	5.80	L	4.5-3000	4.0-3000	10.0-1800	.....	Y	Ce	BM	Car	Zen	G	HE
Reo (18)	552-556	Lm,Af	4	Ver	1	2x1 3/4	5.50	6.22	L	1.5-3600	1.2-3000	2.35-2400	31	Y	Av	Mag	Car	Cart	G	Bp
Rototiller (12)		In	2	Ver	1	3x3 1/4	23.00	6.10	...	5.0-2400	4.5-2000	14.5-1350	204	N	...	Mag	Car	Til	G	Bp
Salsbury (13)	600	GS,Co,Ha,Pu,Re,Af	4	*	1	3x2 3/4	19.40	6.00	L	6.5-3200	5.25-3200	12.5-2000	86	Y	...	Mag	Car	MS	G	Rr
Ultimotor (19)	U200	GS,Co,Ha,Pu,Re,Af	4	Ver	1	2 1/4x2 1/4	8.94	5.88	I	3.0-3000	2.5-2600	4.9-2500	43	Y	Fb	Mag	Car	MS	G	Rr
United (20)	1 H.P.	GS,Co,Pu,Ha,Af	4	Ver	1	2 1/2x2 1/2	11.08	.....	L	.....	.....	.....	70	Y	...	Mag	Car	.....	G	Pe
	2 H.P.	GS,Co,Pu,Ha,Af	4	Ver	1	2 1/2x2 1/2	13.53	.....	L	.....	.....	.....	70	Y	...	Mag	Car	.....	G	Pe
	4 H.P.	GS,Co,Pu,Ha,Af	4	Ver	1	2 1/2x2 1/2	14.89	.....	L	.....	.....	.....	75	Y	...	Mag	Car	.....	G	Pe
Wisconsin (14)	AB	GS,Co,Pu,Re,Af	4	Ver	1	2 1/4x2 3/4	13.50	4.60	L	3.0-2600	2.4-2500	6.7-1700	76	Y	Ce	Mag	Car	MS	G	Bp
	ABN	GS,Co,Pu,Re,Af	4	Ver	1	2 1/4x2 3/4	13.50	5.65	L	4.6-3600	3.7-3600	7.5-2400	77	Y	Ce	Mag	Car	MS	G	Bp
	AK	GS,Co,Ha,Pu,Re,Af	4	Ver	1	2 1/4x2 3/4	17.80	4.60	L	4.1-2400	3.2-2400	9.3-1700	77	Y	Ce	Mag	Car	MS	G	Bp
	AKN	GS,Co,Pu,Re,Af	4	Ver	1	2 1/4x2 3/4	17.80	5.13	L	6.0-3600	4.8-3600	10.4-2400	77	Y	Ce	Mag	Car	MS	G	Bp
	AEH	GS,Co,Pu,Re,Af	4	Ver	1	3x3 1/4	23.00	4.90	L	6.1-2600	4.9-2600	13.0-2900	155	Y	Ce	Mag	Car	Zen	G	Bp
	AEN	GS,Co,Pu,Re,Af	4	Ver	1	3x3 1/4	23.00	5.00	L	7.5-3000	6.0-3000	15.4-2200	.....	Y	Ce	Mag	Car	Zen	G	Bp
	AFH	GS,Co,Pu,Re,Af	4	Ver	1	3 1/4x4	33.20	4.60	L	7.2-2200	5.75-2200	19.8-1400	215	Y	Ce	Mag	Car	Zen	G	Hc
	AGH	GS,Co,Pu,Re,Af	4	Ver	1	3 1/4x4	38.50	4.60	L	8.4-2200	6.7-2200	24.2-1400	215	Y	Ce	Mag	Car	Zen	G	Hc
	AHH	GS,Co,Pu,Re,Af	4	Ver	1	3 1/4x4	41.30	4.60	L	9.2-2200	7.4-2200	25.8-1300	215	Y	Ce	Mag	Car	Zen	G	Hc
	TE	GS,Co,Pu,Af	4	VI	2	3x3 1/4	45.90	4.50	L	11.2-2600	9.0-2600	27.1-1600	220	Y	Ce	Mag	Car	Zen	G	Hc
	TF	GS,Co,Pu,Re,Af	4	VI	2	3 1/4x3 1/4	53.90	4.60	L	13.3-2600	10.8-2600	32.0-1600	220	Y	Ce	Mag	Car	Zen	G	Hc
	VE4	GS,Co,Pu,Re,Af	4	Vee	4	3x3 1/4	91.90	4.50	L	22.0-2600	17.6-2600	50.0-1600	295	Y	Ce	Mag	Car	Zen	G	Hc
	VF4	GS,Co,Pu,Re,Af	4	Vee	4	3 1/4x3 1/4	107.7	4.60	L	25.0-2400	20.0-2400	56.2-1600	295	Y	Ce	Mag	Car	Zen	G	Hc
	VP4	GS,Co,Pu,Re,Af	4	Vee	4	3 1/4x4	154.0	4.60	L	31.0-2200	34.8-2200	88.0-1400	410	Y	Ce	Mag	Car	MS	G	Hc
WATER COOLED ENGINES																				
Cushman (4)	Cub R-14	GS,Co,Ha,Pu,Re,Af	4	Hor	1	3 1/4x4 1/2	37.33	4.50	L	3.0-850	3.0-850	18.4-600	195	Y	Fb	Mag	MV	Own	G,K,Ng	Hc
	Cub R-20	GS,Co,Ha,Pu,Re,Af	4	Hor	1	3 1/2x4 1/2	43.28	4.10	L	3.7-850	3.7-850	22.5-700	235	Y	Fb	Mag	MV	Own	G,K,Ng	Hc
	Cub R-30	GS,Co,Ha,Pu,Re,Af	4	Hor	1	3 1/2x4 1/2	49.70	4.64	L	4.5-850	4.5-850	28.4-800	245	Y	Fb	Mag	MV	Own	G,K,Ng	Hc
	Cub R-40	GS,Co,Ha,Pu,Re,Af	4	Hor	1	4x4 1/2	56.50	5.10	L	5.4-850	5.4-850	35.0-800	255	Y	Fb	Mag	MV	Own	G,K,Ng	Hc
International (21)	U-1	GS,Af,Cm	4	...	4	2 1/2x2 3/4	59.50	6.50	I	16.0-2500	12.8-2500	38.0-1450	440	Y	Ce	Mag	Car	Own	G	Hc

For page on which Directory of Manufacturers appears, see Table of Contents page 65

SMALL GASOLINE ENGINES

MAKE AND MODEL	Designed for Use	ENGINE: Number of Cycles	Type	No. of Cylinders	Bore and Stroke (In.)	Total Displacement (Cu. In.)	Compression Ratio (to — 1)	Valve Location	Horsepower: Rated at RPM	Horsepower: Continuous at RPM	Torque—Lb. Ft. at RPM	Weight (Lb.)	GOVERNOR: Used	GOVERNOR: Type	Ignition System Type	FUEL SYSTEM: Type	FUEL SYSTEM: Make	Fuel Used	Starting Method
Kermath ..... 1 & 2 cyl	Tr,In,M	4	Ver	2	2½x2½	34.00	5.00	L	10 3200	.....	19 2700	86½				Car	Zen	G	.....
Lauson (7) ..... PMM	GS,InM	4	Ver	1	2¾x2¾	17.85	5.80	L	5.5 3000	4.7-3000	9.6-3000	125	Y	Fb	Mag	Car	Til	G	PE
Le Roi (15) B45	GS,Pu,Re,Af,In	4	VI	2	2⅞x3⅛	45.40	5.80	L	10.0-2000	8.3-2000	28.0-1400	450	Y	Fb	BM	CM	ZE	G,D,Ng	HE
..... D91	GS,Pu,Re,Af,In	4	VI	4	2⅞x3½	90.80	5.80	L	21.3-2000	17.0-2000	60.0-1500	510	Y	Fb	BM	CM	ZE	G,D,Ng	HE
..... D140	GS,Pu,Af,In	4	VI	4	3⅛x3⅝	140.0	5.85	I	33.0-2200	25.0-1800	94.0-1300	650	Y	Fb	BM	CM	ZE	G,D,Ng	HE
Onan (11) ..... W3M or S	GS	4	VI	2	3x2¾	38.80	5.50	....	7.1-1800	7.1-1800	20.4-1850	1450	Y	‡	BM	Car	Zen	G,D,Ng	HE
United (20) 2R14	Af	4	Hor	1	3½x4½	.....	.....	L	.....	.....	.....	195	Y	(d)	Mag	Car	Til	G,K,D	Hc
..... 3R20	Af	4	Hor	1	3½x4½	.....	.....	L	.....	.....	.....	235	Y	(d)	Mag	Car	Til	G,K,D	Hc
..... 4R30	Af	4	Hor	1	3½x4½	.....	.....	L	.....	.....	.....	245	Y	(d)	Mag	Car	Til	G,K,D	Hc
Universal (16) ..... AFTC	GS	4	VI	2	3x3½	49.50	5.79	L	5.0-1200	6.0-1350	25.0-1200	385	Y	Me	BM	Car	Str	G	HE

ABBREVIATIONS

*—Cylinder 45° from horisontal
†—Weight includes generator
‡—Flyweights on camshaft
(a)—Inclined 20° up from horisontal
(b)—85% of rated Hp.
(c)—On part oil to 16 parts gasoline
(d)—Automatic—controlled by flywheel
Af—Auxiliary farm implement equipment
Am—Amal
Av—Air Vane
Bat—Battery
Bl—Blowers
BM—Battery and Magneto
Bp—Belt or pulley
CA—Centrifugal or Air Vane
Car—Carburetor
Cart—Carter carburetor
CC—Carter carburetor—Clinton Mixing Bowl
Ce—Centrifugal
CM—Carburetor or Mixing Valve
Co—Air Compressor
CS—Chain Saws
D—Distillate
Ele—Electric
ER—Electric or Rope
Fb—Flyball
G—Gasoline
GS—Generator Sets
Ha—Home appliances
HBP—Hand Crank—Pedal—Rope or Pulley
Hc—Hand Crank
HE—Hand Crank or Electric
Hor—Horisontal
HR—Hand Crank or Rope
Hs—Hoists
I—In head
In—Industrial
InM—Inboard Marine
K—Kerosene
L—"L" Head
Lm—Lawn Mowers
Mag—Magneto
M—Marine
Me—Mechanical
MS—Marvel-Schebler Carburetor Div.
MV—Mixing Valve
N—No or None
Ng—Natural gas
NgG—Combination gas and gasoline
OZ—Own and Zenith
PB—Pedal or Belt or Pulley
Pe—Pedal
Pl—Pulley
Pn—Pneumatic
Pu—Pumps
Rc—Recoil
Re—Refrigerating equipment
Rr—Recoil or Rope
Str—Stromberg Carburetor Div.
Til—Tillotsen Mfg. Co.
Tr—Tractors
Va—Valve
Ver—Verticle
VI—Verticle in line
VO—Verticle opposed
ZE—Zenith Carburetor—Ensign Mixing Valve
Zen—Zenith Carburetor Div.

AIRCRAFT GAS TURBINE ENGINES

COUNTRY AND MANUFACTURER	Model Number	Type of Propulsion Unit	Performance at Sea Level—Standard Conditions Zero Ram: Thrust (Lb.)	Propeller-Shaft Hp.	R.P.M.	Specific Fuel Consumption (Lb. per hr. per lb. of thrust)	Type of Compressor	Number of Stages: Compressor	Number of Stages: Turbine	Combustion Chamber: Number of Chambers	Combustion Chamber: Type	Combustion Chamber: Number of Burners	Dimensions and Weight: Overall Diameter (In.)	Overall Length (In.)	Dry Weight (Lb.)
UNITED STATES															
Allison	400-J33-A-23	TJ	4,600+		11,750	1.120	Cent	1	1	14	DF	14	50.50	103.0	1,735
	TG-18-J35-A-13	TJ	3,750		7,700	1.115	Axial	11	1	8	DF	8	37.50	145.0	2,480
General Electric Co.	TG-190	TJ	5,000		NA	NA									
Pratt & Whitney	Wasp JT-6B	TJ	5,000		12,300	1.09	Cent		1	9			49.50	103.25	1,715
Westinghouse Electric Corp.	24C4B	TJ	NA		NA	NA	Axial	11	2	†	DA	NA	27.00	120.0	1,188
	24C4C	TJ	NA		NA	NA	Axial	11	2	†	DA	NA	27.00	120.0	1,200
GREAT BRITAIN															
Armstrong-Siddeley	Python	PJ	1,150	3,670	8,000								54.50	136.0	3,010
	Mamba	PJ	307	1,010	15,000	.723	Axial	10	2	6	DA	24	29.68	57.0	780
Bristol	Theseus	PJ	600	2,180	9,000	.62	(a)	2	1	8	DA	8	49.0	105.4	1,860
	Proteus	PJ	800	3,200	10,000		(a)			8	DA		38.5	99.75	2,900
De Haviland Engine Co., Ltd.	Goblin 2	PJ	3,000		10,200		Cent			16		16	49.85	100.5	1,644
	Goblin 3	PJ	3,300		10,750		Cent						49.85	100.5	
	Ghost	TJ	5,000		10,000					10		10	53.00	115.5	
Napier	Naid	PJ	241		18,250		Axial			5	DF	5	26.00	102.0	1,122
Rolls Royce	Nene II	TJ	5,000		12,300			1	1				49.50	96.8	1,755
	Derwent V	TJ	3,600		14,700			1	1				43.0	93.1	1,280

ABBREVIATIONS
(a)—Combined axial and centrifugal compressor. **Cent**—Centrifugal. **DF**—Direct Flow. **DA**—Direct Flow, annular chamber. **NA**—Not Available.
PJ—Prop. Jet. **TJ**—Turbo-jet.

For page on which Directory of Manufacturers appears, see Table of Contents page 65

AMERICAN OUTBOARD MOTORS

MAKE AND MODEL	Power Head	Number of Cylinders	Cylinder Material	Bore and Stroke (In.)	Piston Displacement (Cu. In.)	Engine Type	Brake Hp. at R.P.M. O.B.C. Rating	Engine Weight (Lb.) Fully Equipped	Propeller: Piston Rings—Number and Width	Propeller: Diameter (In.)	Propeller: Pitch	Propeller: Right or Left Hand Rotation	Propeller: Number of Blades	Starting Device	Fuel Tank Capacity (Pts.)	Gear: Ratio	Gear: Tooth Pitch	Gear: Material S.A.E. No.	Gearcase Bearing	Magneto Make	Carburetor: Make	Carburetor: Size (In.)	Carburetor: Starting Mixture Obtained by—	Spark Plug Make and Model	Bearings: Main	Bearings: Connecting Rod	Cooling System	Reverse	Lubrication—Pints Oil to 1 Gal. Gasoline
Champion 1K	RV	1	ACS	2 1/4 x 1 3/4	5.84	2-Cy.	4.2 4300	37	1 1/8	8	5 1/2	R	2	RR	10	14-24	12.00	NE8640	Pl	BS	Til		Ch	CH-7	Pl	A	Ce	No	1/4
2K	RV	1	ACS	2 1/4 x 1 3/4	5.84	2-Cy.	4.2 4300	39	2 1/8	8	5 1/2	R	2	RR	10	14-24	12.00	NE8640	Pl	BS	Til		Ch	CH-7	Pl	A	Ce	Yes	1/4
4K	RV-Re.V	2	ACS	2 1/4 x 1 3/4	12.41	AF	7.9 4200	49 1/2	2 1/8	10	8	R	2	RR	10 1/2	14-24	12.00		Pl	BS	Til		Ch	CH-7	Pl	A	Ce	.....	1/4
Chris-Craft Challenger-J	Re.V-2 Port	2	MI	2 1/4 x 1 3/4	9.42	AF	5.5 4000	46	2 1/8	8 1/2	8	L	2	RR	10	14-25	12.00	4615	Pl	Scin	Til	3/4	Ch	CH-J8J	Pl	Pl	Ce	Yes	1/2
Corsair 4921	Re.V-2 Port	2	ACS	2 1/4 x 1 3/4	6.21	2-Cy.	4.0 4200	44	2 1/8	7	7	R	2	RR	8	13 21	10.75	8640	Bo	Wico	Til	3/4	Ch	CH-H10	Pl	Bo	Fvr	Yes	1/2
4927	Re.V-2 Port	2	ACS	1 1/2 x 1 1/2	7.48	AF	5.0 4200	45	3 1/8	7	7 1/2	R	2	RR	8	13 21	10.75	8640	Bo	Wico	Til	3/4	Ch	CH-H10	Bo	Bo	Fvr	Yes	1/2
4923	Re.V-2 Port	2	ACS	2 x 1 3/4	11.00	AF	7.5 4200	84	2 1/8	8	7	R	2	RR	8	13 21	10.75	8640	Bo	Wico	Til	3/4	Ch	CH-H10	Pl	Bo	Fvr	Yes	1/2
Elgin 5830	Re.V-2 Port	1	ACS	1 1/2 x 1 3/8	2.43	2-Cy.	1.2 4000	19	2 1/8	6 1/2	5	L	2	Cord	3 1/2	12 21	14.00	X-1315	Pl	Wico	Til	1/2	Ch	AL-C13	Bo	Pl	Air	No	1/4
5840	Re.V-2 Port	1	ACS	2 x 1 3/8	4.90	2-Cy.	2.5 4000	29	2 1/8	7	4 1/2	L	2	Cord	7	14 21	12.00	X-1350	Pl	Wico	Til	1/2	Ch	AL-C13	Bo	Pl	VP	No	1/4
5852	Re.V-2 Port	2	ACS	2 x 1 3/8	7.52	2-Cy.	3.5 4000	43 1/2	2 1/8	7	5 1/2	L	2	RR	8	14 21	12.00	X-1350	Pl	Wico	Til	1/2	Ch	AL-C13	Bo	Pl	VP	Yes	1/4
5872	Re.V-2 Port	2	ACS	2 x 1 1/2	10.60	2-Cy.	6.0 4000	46	3 1/8	7	7 1/2	L	2	RR	11	14 21	12.00	NE8640	Pl	Wico	Til	3/4	Ch	AL-C15	Bo	Pl	VP	Yes	1/4
Elto		2		1 1/2 x 1 1/2	8.84	AF	5.0 4000	45	3 1/8	7	7 1/2		2		7	13 21				Own	Own			CH-J6J				Yes	1/2
Sportster 4432		2		2 1/2 x 2 1/4	19.94	AF	12.0 4000	65	3 1/8	9	8 1/2		2		12	13 19				Own	Til			CH-J6J				.....	1
Speedster 5101		2		2 1/2 x 2 1/4	19.94	AF	12.0 4000	65	3 1/8	9	8 1/2		2		4.40	12 23				Own	Own			CH-J6J				Yes	1/2
Evinrude Sportsman 4425		1		1 1/2 x 1 1/2	3.10	2-Cy.	1.5 4000	30	2 1/8	6	4 1/2		2	RR	6.60	13 18				Own	Own			CH-J6J				Yes	1/2
Sportwin 4423		2		1 1/2 x 1 1/2	6.22	AF	3.3 4000	39	3 1/8	6	4 1/2		2	RR	7	13 20				Own	Own			CH-5M-J				No	3/4
Zephyr 4429	RV-2 Port	4		1 1/2 x 1 1/2	9.70		9.7 4000	66	3 1/8	7	7 1/2	L	2	RR	10.07	11 17				Own	Own			CH-5M-J				No	1
Lightfoot 4389	RV-2 Port	4		1 1/2 x 1 1/2	15.0					8 1/2	8	L	2	Cord	20	15 21				Own	Own			CH-5M-J				No	1 1/2
Speeditwin 6039	RV-2 Port	2		2 1/2 x 2	30.0	O-2	22.5 4000	115	3 1/8	10	10 1/2	L	3	Cord	29.20	15 21				Own	Own		•	CH-5MJ				No	1 1/2
Speedifour 7031	RV-2 Port	4		2 x 2	50.0		33.4 4000	150	3 1/8	10	12 1/2	L	3	Cord	29.20	15 21				Own	Vac			CH-R7-64C				No	1 1/2
Bigfour 8015	RV-2 Port	4		2 1/2 x 2 1/2	59.4		50.0 4000	178	2 1/8	12	12 1/2	L	3	Cord	29.20	15 21				Own	Vac			CH-R7-64C				No	1 1/2
Firestone 133-9-4911	Re.V-2 Port	1	ACS	2 1/4 x 1 3/4	6.21	2-Cy.	4.0 4200	44	2 1/8	7	7	R	2	RR	8	13 21	10.75	8640	Bo	Wico	Til	3/4	Ch	CH-H10	Pl	Bo	Fvr	Yes	1/2
133-9-4917	Re.V-2 Port	2	ACS	1 1/2 x 1 1/2	7.48	AF	5.0 4200	45	3 1/8	7	7 1/2	R	2	RR	8	13 21	10.75	8640	Bo	Wico	Til	3/4	Ch	CH-H10	Bo	Bo	Fvr	Yes	1/2
133-9-4913	Re.V-2 Port	2	ACS	2 x 1 3/4	11.00	AF	7.5 4200	54	2 1/8	8	8 1/2	L	2	Cord	6	13 24	12.00	1315	Pl	Eis	Own		Fl	CH-J7J	Pl	Pl	Roi	No	1/4
Flambeau 174050	-3 Port	2	CI	1 1/2 x 1 7/8	9.24	AF	5.0 4000	32	3 1/8	7	6	L	2	Cord	6	13 24	12.00	1315	Pl	Eis	Own		Fl	CH-J7J	Pl	Pl	Roi	No	1/4
174520	-3 Por.	2	CI	1 1/2 x 1 7/8	4.62	2 Cy.	2.5 4000	26	3 1/8	7	6	L	2	RR	6	13 20	10.38	4615	Pl	Own	Own		Pr	CH-J7J	Pl	Pl	Rot	Yes	1/2
Hiawatha 940-M1-25-7972A	Re.V-2 Port	2	ACS	1 1/2 x 1 1/2	8.84	AF	5.0 4000	45	3 1/8	7	7 1/2	L	2	RR	12	13 19	8.00	4615	Pl	Own	Til	3/4	Ch	CH-J7J	Pl	Pl	Rot	No	1/2
940-M1-25-7980A	Re.V-2 Port	2	ACS	2 1/2 x 2 1/4	19.94	AF	12.0 4000	66	3 1/8	9	8 1/2	R	2	RR	8	13 20	13.33	4615	Pl	Own	Own		Pr	CH-J8J	Pl	Pl	Rot	Yes	1/2
Johnson HD-25	RV-3 Port	2	ACS	1 3/4 x 1 3/8	4.08	AF	2.5 4000	31	3 1/8	6	5 1/2	R	2	RR	7	14 25	12.00	4615	Pl	Own	Own		Pr	CH-J8J	Pl	Pl	Rot	Yes	1/2
TD-20	RV-3 Port	2	ACS	1 1/2 x 1 1/2	8.84	AF	5.0 4000	44	3 1/8	8	7 1/2	R	3	RR	40•	14 24	10.80	4615	A	Own	Own		Pr	CH-J8J	A	A	VV	Yes	1/2
QD-10	Re.V-2 Port	2	ACS	2 1/4 x 2 1/4	16.63	AF	10.0 4000	55•	3 1/8	9	8	R	3	RR	40•	14 24	10.00	4615	Bo	Own	Own		Pr	CH-5MJ	Pl	A	HV	No	1/2
SD-20	RV -2 Port	2	ACS	2 1/2 x 2 1/2	22.03	AF	16.0 4000	85	3 1/8	10	10	R	3	RR	40•	12 21	7.50	4615	Bo	Own	RFB	2	Ch	CH-R7	Pl	A	PV	No	1/2
PQ-15	RV -2 Port	2	NCI	2 1/4 x 2.52	29.92	O-2	22.0 4000	115 3/4	3 1/8	12 1/2	12	R	3	Cord	20	12 21	12.00	X-1315	Pl	Wico	Zen		Ch	CH-J8	A	Pl	Air	No	(b)
Lauson S-300	Pop	1	CI	2 1/4 x 1 7/8	6.29	4 Cy.	3.0 3800	37	(a)	7 1/2	6	L	2	RR	10	13 21	12.00	X-1315	Pl	Eis	Til		Ch	CH-J8	A	Pl	Air	No	(b)
T-600	Pop	2	CI	2 1/4 x 1 7/8	12.58	O-4	6.0 3800	54	(a)	8	6 1/2	R	2	RR	7	13 20	(c)	4150	Pl	Wico	Til	3/4	Fl	CH-J6J	Pl	Pl	Rol	Yes	1/4
Martin 20	Pop	1	CI	1 3/4 x 1 3/4	2.88		2 1/2 4300	31	3 1/8	6	4	R	2	RR	7	13 20	(c)	4150	Pl	Wico	Til	3/4	Fl	CH-J8J	Pl	Pl	Rol	Yes	1/4
40	Pop	2	CI	1 3/4 x 1 3/4	5.76	AF	4.5 4300	36	3 1/8	7	6	R	2	RR	8	13 20	(c)	4150	Pl	Wico	Til	3/4	Fl	CH-J8J	Pl	Pl	Rol	Yes	1/4
60	Pop	2	CI	2 x 1 3/4	11.00	AF	7.2 4000	44	3 1/8	8	8	R	2	RR	8	13 20	14.00	Dab	Pl	Phe	Til		Fl	CH-J10	Pl	Pl	Ce	No	1/2
Neptune A-1	Re.V-2 Port	1	ACS	1 1/2 x 1 1/2	2.87	2-Cy.	1.7 4000	17	2 1/8	6	5	L	2	Cord	2	13 20	14.00	2345	Pl	Phe	Til		Fl	CH-J10	A	Pl	Rot	Yes	1
A-2	Re.V-2 Port	1	ACS	2 1/4 x 1 3/4	5.01	2-Cy.	3.3 4000	30	3 1/8	7	5 1/2	R	2	Cord	4	13 20	14.00	2345	Pl	Phe	Til		Ch	CH-J10	A	Pl	Rot	Yes	1
AA-2	Re.V-2 Port	1	ACS	2 1/4 x 1 3/4	5.01	2-Cy.	3.3 4000	33	3 1/8	7	5 1/2	R	2	RR	5 1/2	13 20	14.00	2345	Pl	Wico	Til		Ch	CH-J10	A	Pl	Rot	Yes	1
AA-4	Re.V-2 Port	2	ACS	1 3/4 x 1 3/4	7.20	AF	5.0 4000	40	3 1/8	7	5 1/2	R	2	RR	5 1/2	14 21	12.00	2345	Bo	Wico	Til		Ch	CH-J10	A	Pl	Ce	No	1
AA-6	Re.V-2 Port	2	ACS	2 1/4 x 1 3/4	10.02	AF	7.0 4000	52	3 1/8	8	7	R	2	RR	8	12 21	8.00	2345	Bo	Wico	Til		Ch	CH-J10	A	Pl	Ce	No	1
AA-10	Re.V-2 Port	2	ACS	2 1/4 x 2	15.90	AF	10.0 4000	62	3 1/8	9	9	R	3	RR	8	12 21	8.00	2345	Bo	Wico	Til		Ch	CH-J10	A	Pl	Ce	No	1
Royal 1A5	Re.V-2 Port	1	ACS	1 3/4 x 1 1/2	3.11	AF	1.5 4000	21	2 1/8	6 1/2	Var	L	2	Cord	4	13 22	13.56	4615	Pl	Own	Til	1/2	Pr	CH-J7J	Pl	Pl	Rot	Yes	1/2
2A7	Re.V-2 Port	2	ACS	1 1/2 x 1 1/2	8.84	AF	5.0 4000	45	3 1/8	7	7 1/2	L	2	RR	6	13 20	10.38	4615	Pl	Own	Til	3/4	Ch	CH-J7J	Pl	Pl	Rot	No	1/2
2A8	Re.V-2 Port	2	ACS	2 1/2 x 2 1/4	19.94	AF	12.0 4000	66	3 1/8	9 1/4	Var	L	2	RR	12	13 19	8.00	4615	Pl	Own	Til	3/4	Ch	CH-H10	Pl	Bo	Fvr	Yes	1/2
Scott-Atwater 491	Re.V-2 Port	1	ACS	2 1/4 x 1 3/4	6.21	2-Cy.	4.0 4000	45	2 1/8	7 1/2	6	R	2	RR	8	13 21	10.75	8640	Bo	Wico	Til		Ch	CH-H10	Bo	Bo	Fvr	Yes	1/2
497	Re.V-2 Port	2	ACS	1 1/2 x 1 1/2	7.48	AF	5.0 4000	46	3 1/8	7	7 1/2	R	2	RR	8	13 21	10.75	8640	Bo	Wico	Til		Ch	CH-H10	Pl	Bo	Fvr	Yes	1/2
493	Re.V-2 Port	2	ACS	2 x 1 3/4	11.00	AF	7.5 4000	53	3 1/8	8	7 1/2	R	2	RR	8	13 22	13.56	4615	Pl	Own	Til	1/2	Ch	CH-J7J	Pl	Pl	Rot	Yes	1/2
Sea Bee 025-3562	Re.V-2 Port	1	ACS	1 3/4 x 1 1/2	3.11	AF	1.5 4000	21	2 1/8	6 1/2	Var	L	2	Cord	4	13 22	13.56	4615	Pl	Own	Own	1/2	Pr	CH-J7J	Pl	Pl	Rot	Yes	1/2
025-3563	Re.V-2 Port	1	ACS	2 1/4 x 1 3/4	5.32		3.0 4000	28	2 1/8	6 1/2	Var	L	2	Cord	4	13 22	13.56	4615	Pl	Own	Own	1/2	Pr	CH-J7J	Pl	Pl	Ret	Yes	1/2
025-3564	Re.V-2 Port	2	ACS	1 1/2 x 1 1/2	8.84	AF	5.0 4000	45	3 1/8	7	7 1/2	L	2	RR	8	13 20	10.38	4615	Pl	Own	Til	3/4	Ch	CH-J7J	Pl	Pl	Rot	No	1/2
025-3565	Re.V-2 Port	2	ACS	2 1/2 x 2 1/4	19.94	AF	12.0 4000	66	3 1/8	9 1/4	Var	L	2	RR	12	13 19	8.00	4615	Pl	Own	Til	3/4	Ch	CH-J7J	Pl	Pl	Rot	Yes	1/2
Sea King 94GG-9003A	Re.V-2 Port	1	ACS	1 3/4 x 1 1/2	3.11	AF	1.5 4000	21	2 1/8	6 1/2	Var	L	2	Cord	4	13 22	13.56	4615	Pl	Own	Own	1/2	Pr	CH-J7J	Pl	Pl	Rot	Yes	1/2
94GG-9007A	Re.V-2 Port	1	ACS	2 1/4 x 1 3/4	5.32		3.0 4000	28	2 1/8	6 1/2	Var	L	2	Cord	4	13 22	13.56	4615	Pl	Own	Own	1/2	Pr	CH-J7J	Pl	Pl	Ret	Yes	1/2
94GG-9014A	Re.V-2 Port	2	ACS	1 1/2 x 1 1/2	8.84	AF	5.0 4000	45	3 1/8	7	7 1/2	L	2	RR	6	13 20	10.38	4615	Pl	Own	Til	3/4	Ch	CH-J7J	Pl	Pl	Rot	No	1/2
94GG-9017A	Re.V-2 Port	2	ACS	2 1/2 x 2 1/4	19.94	AF	12.0 4000	66	3 1/8	9 1/4	Var	L	2	RR	12	13 19	8.00	4615	Pl	Own	Til	3/4	Ch	CH-J7J	Pl	Pl	Rot	No	1/2

ABBREVIATIONS

(a)—Compression 2 1/2". Oil 1 1/2".
(b)—Two crankcase rape.
(c)—250 circular pitch.
•—Less gas tank—which is separate from motor but connected by flexible line.

A—Antifriction bearing.
ACS—Aluminum with Cast Iron Sleeves.
AF—Alternate firing.
AL—All State.
Bo—Both—plain and anti-friction bearing.
BS—Bendix Scintilla.
Ce—Centrifugal.
Ch—Choke.
CH—Champion Spark Plug Co.
Ch-V—Check valve.
CI—Cast Iron.
Cy—Cycle.
Eis—Eiseman.
Fl—Flooding.
Fvr—Flexible vane rotor.
HV—Hi-Vac.
L—Left.
MI—Meehanite Iron.
NCI—Nickel Cast Iron
O-2—Opposed two cycle.
O-4—Opposed four cycle.
Phe—Phelan.
Pl—Plain
Pop—Poppet valve.
Pr—Primer.
PV—Pressure vacuum.
R—Right.
Re.V—Reed valve.
RFB—R. F. Bracke Co.
Roi—Rotary impellor.
Rol—Rollator rubber.
Rot—Rotary pump.
RR—Rewinding rope.
RV—Rotary valve.
Scin—Scintilla.
Til—Tillotson carburetor.
Vac—Vacturi.
Var—Varying.
VP—Vane pump.
VV—Vari-Vol.
Zen—Zenith.

BRITISH AIRCRAFT ENGINES

ENGINE MAKE AND MODEL	GENERAL DATA: Arrangement	Cooling Medium	Number of Cylinders Bore and Stroke (In.)	Total Piston Displacement (Cu. In.)	Compression Ratio	B.M.E.P. at Maximum Hp. (Lb. per Sq. In.)	Blower Ratio	No. of Valves per Cylinder: Intake	Exhaust	Valve Arrangement	RATINGS: Maximum (Except Take-off): Horsepower	R.P.M.	At Sea Level or Altitude (FL)	Take-off: Horsepower	R.P.M.	Cruising: Horsepower	R.P.M.	Octane Rating of Fuel Required	Propeller Drive Ratio	Weight (Lb.): Engine—Dry Without Hub or Starter	Per Maximum Hp. (Except Take-off)	Carburetor: Number Used and Make	Type	Ignition System—Make	Starting: Make	Method	Installation Dimensions (Overall—Ins.): Length	Height or O.D.	Width	Height above Engine Bed (In.)	Diameter Mounting Ring or Distance Between Bearers (In.)
Alvis Ltd. *Leonides 501-1, 2, 3, 4	Rad	Air	9 4.80x4.41	719	6.80	167	6.50	5	1	I	440	2900	8750	520	3000	400	2800	100	.533	760	1.72	1-Hob	PI	BTH	Rot	EM	53.0	41.5	41.5	.....	18.7
Bristol LE23HM	Rad	Air	9 4.80x4.41	719	6.80	175	6.50	5	1	I	460	2900	6500	550	3200	400	2800	100	Dir	710	1.54	1-Hob	PI	BTH	Rot	EM	32.0	41.5	.....	.....	18.7
Westland WS51L	Rad	Air	9 4.80x4.41	719	6.80	175	6.50	5	1	I	460	2900	6500	520	3000	400	2800	100	0.8	747	1.70	1-Hob	PI	BTH	Rot	EM	48.7	41.5	.....	.....	18.7
Faireys LE22HM	Rad	Air	9 4.80x4.41	719	6.80	167	6.50	5	1	I	440	2900	8750	520	3000	400	2800	100	Dir	693	1.57	1-Hob	PI	BTH	Rot	EM	39.6	41.5	.....	.....	18.7
Armstrong Sid ... Cheetah Mk 15-Mk 25	Rad	Air	7 5.25x5.50	835	6.35	193	6.62	5	1	I	405	2425	.....	423‡	2553‡	310	2100	87	.732	833	1.99	1-Hob	FL	BTH	Rot	EM	49.6	47.7	47.7	.....	25
Blackburn ... Cirrus Minor 2	IL	Air	4 3.94x5.00	243	6.25	125		5	1	I	100	2600	SL	92	2300	82	2300	73	Dir	231	2.34	1-Zen	FL	BTH	Rot	EM	33.9	25.6	17.9	8.0	.....
Cirrus Minor 503	IL	Air	4 3.94 5.00	243	6.25	127		5	1	I	98	2500	SL	98	2500	82	2300	73	Dir	231	2.39	1-Zen	FL	BTH	Rot	EM	39.9	25.6	17.9	8.0	.....
Cirrus Major 2	IL	Air	4 4.72x5.50	386	5.80	125		5	1	I	150	2450	SL	138	2200	126	2200	73	Dir	327	2.18	1-Hob	FL	BTH	Rot	EM	43.1	31.4	17.7	8.5	.....
Cirrus Major 3	IL	Air	4 4.72x5.50	386	6.50	129		5	1	I	155	2450	SL	146	2200	138	2200	83	Dir	333	2.15	1-Hob	FL	BTH	Rot	EM	43.1	31.4	17.7	8.5	.....
Bombardier 702	IL	Air	4 4.80x5.50	398	7.00	138		5	1	OH	180	2600	SL	180	2600	158	2300	91/98	Dir	354	1.97	**		3TH	BTH	EM	46.8	31.1	17.9	12.3	.....
Bristol ..... Hercules 672	Rad	Air	14 5.75x6.50	2360	7.00	214	6.38	9§	+	+	1530	2400	4000	1690	2800	1320	2400	100/130	.444	1940	1.27	1-Hob	PI	BT-R	Rot	EM	40.9	52.0	.....	.....	30.3
Centaurus 661	Rad	Air	18 5.75x7.00	3270	7.20	235	5.72	9*	+	+	2310	2400	4500	2700	2900	1750	2400	100/130	.400	3325§	1.44	1-Hob	PI	BT-R	Rot	EM	54.7	55.3	.....	.....	38.7
	2 S peed		Blower				6.77				2260	2400	12500			1720	2400														
Hercules 634	Rad	Air	14 5.75x6.50	2360	7.00	214	6.38	9§	+	+	1510	2400	3750	1690	2800	1315	2400	100/130	.444	1930	1.28	1-Hob	PI	BT-R	Rot	EM	40.4	52.0	.....	.....	30.3
Hercules 733	Rad	Air	14 5.75x6.50	2360	7.00	246	6.38	9*	+	+	1630	2400	4000	2000	2800	1265	2400	100/130	.444	2115†	1.30	1-Hob	PI	BT-R	Rot	EM	41.6	52.0	.....	.....	30.3
Hercules 763	Rad	Air	14 5.75x6.50	2360	7.00	243	6.64	9*	+	+	1590	2400	4250	2040	2900	1226	2400	115/145	.444	2315†	1.47	1-Hob	PI	BT-R	Rot	EM	43.9	52.0	.....	.....	30.3
	2 S peed		Blower				8.30				1490	2400	15000			1130	2400														
Centaurus 57	Rad	Air	18 5.75x7.00	3270	7.20	253	5.93	9§	+	+	2160	2400	5000	2810*	2700	1745	2400	100/130	.400	2800	1.30	1-Hob	PI	BT-R	Rot	EM	50.0	55.3	.....	.....	32.0
	2 S peed		Blower				7.76				1975	2400	15750			1600	2400														
Centaurus 663	Rad	Air	18 5.75x7.00	3270		249	6.62	9*	+	+	2405	2400	7750	2810	2900	1830	2400	115/145	.400	3325§	1.38	1-Hob	PI	BT-R	Rot	EM	54.7	55.3	.....	.....	38.7
	2 S peed		Blower				7.82				2280	2400	16000			1745	2400														
Hercules 230	Rad	Air	14 5.75x6.50	2360	7.00	234	6.38	9*	+	+	1620	2400	3250	1880	2800	1260	2400	100/130	.444	2060	1.27	1-Hob	PI	BT-R	Rot	EM	41.6	52.0	.....	.....	30.3
DeHavilland ... Gipsy Major 10	IL	Air	4 4.84x5.51	373	6.00	121		5	1	I	145	2550	SL	145	2550	108	2300	80		318	2.20	1-Hob	FL	BTH	Rot	H-E	45.04	30.62	20.0	9.0	21.28
Gipsy Major 30	IL	Air	4 4.73x5.91	414	6.25	122		5	1	I	160	2500	SL	160	2500	118	2100	80		380	2.13	1-Hob	FL	BT-R	Rot	EM	43.04	32.24	17.65	11.03	21.23
Gipsy Major 50	IL	Air	4 4.73x5.91	414	6.50	144	11.163	5	1	I	180	2400	7000	197	2500	121	2100	87		401	2.24	H-I	PI	BT-R	Rot	EM	49.74	32.24	17.65	11.03	21.26
Gipsy Queen 30	IL	Air	6 4.73x5.91	621	6.50	127		5	1	I	250	2500	SL	250	2500	180	2100	87		530	2.12	2-Hob	FL	BT-R	Rot	EM	56.36	33.05	20.24	11.8	25.22
Gipsy Queen 50	IL	Air	6 4.73x5.91	621	6.50	143	11.163	5	1	I	272	2500	7000	295	2500	182	2100	87		583	2.07	H-I	PI	BT-R	Rot	EM	61.24	33.05	19.63	11.8	25.22
Gipsy Queen 70	IL	Air	6 4.73x5.91	621	6.50	144	11.205	5	1	I	362	2800	6000	345	2800	275	2400	100	.7111	630	2.83	H-I	PI	BT-R	Rot	EM	63.84	33.26	19.63	12.05	18.90
Rolls-Royce ... Merlin 134 135	V-60	Liq	12 5.40x6.00	1649	6.00	288	5.79 (b)	2	2	2 OH	1780	3000	4500	1610	3000	1100	2650	100	.423	1720	.87	1-SU	PI	BT-R	BTH	EM	89.0	40.0	31.0	23.3	18.5
Merlin 140	V-60	Liq	12 5.40x6.00	1649	6.00	285	5.79 (b)	2	2	2 OH	1780	3000	4500	1725	3000	1200	2650	100	.512	1780	1.00	1-SU	PI	BT-R	Pla	Car	102	40.0	32.0	23.3	18.5
Merlin 500	V-60	Liq	12 5.40x6.00	1649	6.00	262	8.15 (a)	2	2	2 OH	1635	3000	2250	1610	3000	1030	2650	100	.423	1525	.93		FL	BT-R	BTH	EM	79.0	43.5	30.0	22.0	18.5
Merlin 620	V-60	Liq	12 5.40x6.00	1649	6.00	284	5.79 (b)	2	2	2 OH	1770	3000	4000	1725	3000	1160	2650	100	.470	1740	.98	1-SU	PI	BT-R	BTH	EM	86.0	43.5	31.5	23.3	18.5
Merlin 621	V-60	Liq	12 5.40x6.00	1649	6.00	284	5.79 (b)	2	2	2 OH	1770	3000	4000	1725	3000	1160	2650	100	.420	1740	.98	1-SU	PI	BT-R	BTH	EM	86.0	43.5	31.5	23.3	18.5
Griffon 74	V-60	Liq	12 6.00x6.60	2239	6.00	289	5.16 (e)	2	2	2 OH	2245	2750	9250	2020	2750	1310	2400	100/150	.451	2100	.93	1-Own	PI	BTH	Pla	Car	90.0	45.0	29.5	25.6	25
Eagle 22	H	Liq	24 5.40x5.12	2816	6.50	283	3.00 (f)	2	3	2 SS	3520	3500	3250	3440	3500	2180	3100	100	.298	3930	1.11	1-OS	PI	BTH	BTH	EM	135	50.0	43.5	30.0	14
Merlin 622	V-60	Liq	12 5.40x6.00	1649	6.00	290	5.79 (b)	2	2	2 OH	1810	3000	4000	1760	3000	1175	2650	100	.471	1740	.96	1-SU	PI	Rot	BTH	EM	86.0	43.5	31.5	23.3	18.5
Merlin 623	V-60	Liq	12 5.40x6.00	1649	6.00	290	5.79 (b)	2	2	2 OH	1810	3000	4000	1760	3000	1175	2650	100	.420	1740	.96	1-SU	PI	Rot	BTH	EM	86.0	43.5	31.5	23.3	18.5
Merlin 624	V-60	Liq	12 5.40x6.00	1649	6.00	290	5.79 (b)	2	2	2 OH	1810	3000	4000	1760	3000	1175	2650	100	.420	1740	.96	1-SU	PI	Rot	BTH	EM	86.0	43.5	31.5	23.3	18.5
Merlin 626	V-60	Liq	12 5.40x6.00	1649	6.00	290	5.79 (b)	2	2	2 OH	1810	3000	4000	1760	3000	1175	2650	100	.420	1740	.96	1-SU	PI	Rot	BTH	EM	86.0	43.5	31.5	23.3	18.5
Griffon 57	V-60	Liq	12 6.00x6.60	2239	6.00	321*	6.61 (d)	2	2	2 OH	2030	2750	1750	2530*	2750	1380	2400	100/150	.442	2050	1.01	1-Own	PI	BTH	BTH	EM	103	41.2	31.8	25.6	25

ABBREVIATIONS

* Data shown are for 501-1. Models 2, 3, and 4 vary only in propeller drive ratio, weights and length.

† Includes Torquemeter, which increases weight by 45 lbs.

§ Includes Torquemeter, which increases weight by 55 lbs.

‡ Model Mk 25 has take-off of 475 at 2700.

+ Aluminum cylinders with 2-piece heads.

* Aluminum cylinders with copper-based heads.

+ Sleeve valves, with one stainless steel sleeve per cylinder.

+ From propeller center line to rear of engine.

** Direct injection to each cylinder.

* With Water-Methanol injection.

2—Aluminum with steel liner.

5—Steel with Aluminum Head.

9—Aluminum Alloy.

(a)—Also 9.49 Blower Ratio.

(b)—Also 7.06 Blower Ratio.

(d)—Also 7.70 Blower Ratio.

(e)—Also 6.79 Blower Ratio.

(f)—Also 3.67 Blower Ratio.

BTH—British Thomas-Houston Co.

BT-R—British Thomas-Houston or Rotax.

Car—Cartridge. Dir—Direct.

EM—Electric motor. FL—Float.

H—Horizontally opposed.

H-E—Hand or electric motor.

H-I—Hobson injector.

Hob—H. M. Hobson Components Ltd.

I—In head with push rods and rocker arms.

IL—In line. Liq—Liquid

OH—Overhead valves.

OS—Own or S. U.

Pla—Plessey.

PI—Pressure Injection.

Rad—Radial.

Rot—Rotax Ltd.

SS—Single sleeve.

SL—Sea level. Zen—Zenith.

For page on which Directory of Manufacturers appears, see Table of Contents page 65

FOREIGN PASSENGER CARS

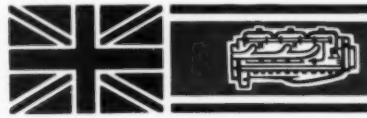
MAKE AND MODEL	ENGINE: Number of Cylinders, Bore and Stroke (In.)	ENGINE: Max. Brake Hp. at Specified R.P.M.	ENGINE: Piston Displacement (Cu. In.)	ENGINE: Compression Ratio (To-1)	ENGINE: Cylinder Arrangement	ENGINE: No. of Main Bearings	ENGINE: Valve Location	ENGINE: Crankcase Type	ENGINE: Piston Material	ENGINE: Camshaft Drive	GENERAL DATA: Wheelbase (In.)	GENERAL DATA: Tread Front (In.)	GENERAL DATA: Tread Rear (In.)	GENERAL DATA: Tires (In.)	GENERAL DATA: Oil Pressure to—	GENERAL DATA: Carburetor—No. Used and Type	GENERAL DATA: Cooling System	GENERAL DATA: Clutch Type	TRANSMISSION: Location	TRANSMISSION: Type	TRANSMISSION: No. of Forward Speeds	TRANSMISSION: Synchronizing Clutches	REAR AXLE: Final Drive Type	REAR AXLE: Gear Ratio (to-1)	REAR AXLE: Torque taken by	Independent Suspension	Service Brakes	Chassis Weight (Lb.)
BRITISH																													
Allard 30HP-V8	8 3.06x3.75	85-3800	220.9	6.10	V	3	L In	AL	HI	112.0	56.0	58.0	6.25.16	abc	1-Do	Tp	SP	U	Hs	3 Y	SB	4.10 tt	F	H	2164
30HP-V8	8 3.06x3.75	85-3800	220.9	6.10	V	3	L In	AL	HI	106.0	56.0	52.0	6.25.16	abc	1-Do	Tp	SP	U	Hs	3 Y	SB	4.10 tt	F	H	2128
30HP-V8	8 3.06x3.75	85-3800	220.9	6.10	V	3	L In	AL	HI	112.0	56.0	52.0	6.25.16	abc	1-Do	Tp	SP	U	Hs	3 Y	SB	4.10 tt	F	H	2184
Alta *Grand Prix	4 3.07x3.07	220-6600	90.8	8.50	I	3	I Se	AL	C	102.0	55.0	55.0	7.00.16	abcd	1-Ho	Pu	SP	U	Hs	4 Y	B	4.00 ta	A	H	1320
Alvis T. A. 14	4 2.91x4.33	65-4000	115.4	6.72	I	3	I In	AL	C	108.0	54.0	54.0	6.00.16	abe	1-Ho	Pu	SP	U	Hs	4 Y	Hy	4.87 Sp	N	M	1960
Armstrong Siddeley 18HP	6 2.56x3.94	70-4200	121.4	7.00		4	I In	AL	C	115.0	54.0	54.5	5.50.17	abce	1-Do	Pu	SP	U	44	4	Hy	5.10 Sp	F	◇	1848
Aston Martin 2 Litre	4 3.25x3.62	90-4750	120.2	7.25	I		I In	AL	C	108.0	54.0	54.0	5.75.16	abc	2-	Pu	SP	U	Ht	4 Y	Hy	4.10 ta	F	H	2520▲
Austin A40	4 2.57x3.50	40-4300	73.2	7.20	I	3	I In	AL	C	92.5	48.5	49.5	5.25.16	abce	1-Do	Pu	SP	U	Hs	4 Y	SB	5.43 Sp	F	◇	1092
A70	4 3.12x4.37	67-3800	134.1	6.80	I	3	I In	AL	C	96.0	53.5	55.5	5.50.16	abce	1-Do	Pu	SP	U	Hs	4 Y	SB	4.12 Sp	F	◇	1456
A90	4 3.43x4.37	68-4000	162.7	7.50	I	3	I In	AL	C	108.0	54.0	55.5	5.50.16	abce	2-Ho	Pu	SP	U	Hs	4 Y	SB	3.66 Sp	F	H	1456
Sixteen	4 3.12x4.37	67-3800	134.1	6.80	I	3	I In	AL	C	104.5	53.5	56.5	5.75.16	abce	1-Do	Pu	SP	U	Hs	4 Y	SB	4.33 Sp	N	M	1897
A125	6 3.43x4.37		243.0	6.80	I	4	I In	AL	C	119.0	56.0	60.0	6.50.16	abce	1-Do	Pu	SP	U	Hs	4 Y	Hy	4.45 Sp	F	◇	2464
A135	6 3.43x4.37	130-3700	243.0	6.80	I	4	I In	AL	C	119.0	58.0	60.0	6.50.16	abce	3-Ho	Pu	SP	U	Hs	4 Y	Hy	4.45 Sp	F	◇	2464
Bentley Mark VI	6 3.50x4.50		260.0	6.40	I	7	F In	AL	HI	120.0		58.5	6.50.16		2-Ho		SP	U	Hs	4 Y	Hy	3.73 Sp	F	◇	
Bristol 400, 401, 402	6 2.60x3.78	85-4500	120.2	7.50	I	4	I In	AL	C	114.0	51.7	54.0	5.50.16	abcde	3-Do	Pu	SP	U	Hs	4 Y	SB	3.90 ta	Tf	H	1680
Citroen-Front Dr. Light 15	4 3.07x3.94	56-3800		6.20	I	3	I In	AL	C	114.5	54.1	53.2	165.400	abc	1-Do	Pu	SP	U	Hs	3 Y	SB	3.41	F	H	2352
Daimler DB-18	6 2.74x4.35	70-3400	154.0	7.00	I	4	I In	AL	C	114.0	52.0	52.0	6.00.16	abce	1-Ho	Pu	H	U	Pr	4 Y	Wo	4.37 Sp	F	M	2352
DB18-Sports	6 2.74x4.35	85-3800	154.0	7.00	I	4	I In	AL	C	114.0	52.0	52.0	6.00.16	abce	2-Ho	Pu	H	U	Pr	4 Y	Wo	4.85 Sp	F	M	2352
DE-27	6 3.35x4.72	105-3500	250.0	6.30	I	4	I In	AL	C	138.5	60.0	63.0	8.00.17	abce	1-Do	Pu	H	U	Pr	4 Y	Hy	4.72 ta	F	Hm	3684
DE-36	8 3.35x4.72	150-3800	333.0	6.30	I	5	I In	AL	C	147.0	60.0	63.0	8.00.17	abce	2-Do	Pu	H	U	Pr	4 Y	Hy	4.09 ta	F	Hm	4144
Ford Except N. A. Anglia	4 2.23x3.64	23-4000	56.9	6.30	I	3	L In	AL	C	90.0	45.0	45.0	4.50.17	abce	1-Do	Th	SP	U	Hs	3 Y	SB	5.50 tt	N	M	980
N. A. Anglia	4 2.50x3.64	30-4000	71.5	6.16	I	3	L In	AL	C	94.0	45.0	45.0	5.00.16	abce	1-Do	Th	SP	U	Hs	3 Y	SB	5.50 tt		M	993
Prefect	4 2.50x3.64	30-4000	71.5	6.16	I	3	L In	AL	C	94.0	45.0	45.0	5.00.16	abce	1-Do	Th	SP	U	Hs	3 Y	SB	5.50 tt		M	1033
Pilot	8 3.06x3.75	85-3500	221.0	6.15	V	3	I In	AL	Sr	108.2	55.9	58.0	6.00.16	abce	1-Do	Tp	SP	U	Hs	3 Y	SB	3.70 tt	N	M	2072
Frazer-Nash High Speed	6 2.60x3.78	120-5500	120.2	9.50	I	4	I In	AL	C	98.0	48.0	48.0	5.25.16	abcde	3-Do	Pu	SP	U	Hs	4 Y	SB	3.55 ta	T	H	1120
Fast Tourer	6	90-4500		8.00	I	4	I In	AL	C	98.0	48.0	48.0	5.25.16	abcde	3-Do	Pu	SP	U	Hs	4 Y	SB	3.55 ta	T	H	1180
Healey *2.4 Litre	4 3.17x4.72	104-4500	149.0	6.90	I	3	I In	AL	C	102.0	54.0	53.0	5.75.15	abce	2-Ho	Pu	SP	U	Hs	4 Y	SB	3.51 tt	F	H	1848
Hillman Minx	4 2.48x3.74	35-4100	72.2	6.30	I	3	L In	AL	C	93.0	48.6	48.5	5.00.16	abce	1-Do	Th	SP	U	Hs	4 Y	SB	5.22 Sp	F	H	19954
Estate Car	4 2.48x3.74	35-4100	72.2	6.30	I	3	L In	AL	C	93.0	48.6	50.5	5.50.15	abce	1-Do	Th	SP	U	Hs	4 Y	SB	5.22 Sp	F	H	21844
H. R. G. 1100CC	4 2.36x3.74	60-5200	65.5	7.75	I	3	I In	AL	C	100.5	48.0	48.0	5.50.17	abce	2-Do	Pu	SP	U	Hs	4 Y	SB	4.55 Sp	N	M	1260
Humber "80"	4 2.48x3.74	47-4800	72.2	6.88	I	3	I In	AL	C	97.5	47.5	50.5	5.25.16	abce	1-Do	Pu	SP	U	Hs	4 Y	SB	5.22 Sp	N	H	1706
Super Snipe	6 3.35x4.72	100-3400	249.2	6.25	I	4	L In	AL	C	117.5	57.9	61.0	6.50.16	abcde	1-Do	Pu	SP	U	Hs	4 Y	SB	4.09 Sp	F	H	2695
Pullman	6 3.35x4.72	100-3400	249.2	6.25	I	4	L In	AL	C	131.0	57.9	62.2	7.00.16	abcde	1-Do	Pu	SP	U	Hs	4 Y	SB	4.09 Sp	F	H	3010
Hawk	4 2.95x4.33	56-3800	118.6	6.40	I	3	L In	AL	C	105.5	56.0	57.0	5.50.15	abcde	1-Do	Pu	SP	U	Hs	4 Y	Hy	4.55 Sp	F	H	1720
Invicta 6 P. C. 180	6 3.19x3.82	120-5000	182.9	7.20	I	7	I In	AL	C	120.0	55.0	58.0	6.00.16	ace	3-Ho	Pu		Ca	Ca	Ca	Hy	4.27 ta	A	H	2690
Jaguar Mark V—3½ Litre	6 3.23x4.33	125-4250	212.6	6.75	I	7	I In	AL	C	120.0	56.0	57.5	6.70.16	abcde	2-Ho	Pu	SP	U	Hs	4 Y	Hy	4.36 Sp	F	H	3584
Mark V—2½ Litre	6 2.48x3.17	102-4600	162.5	7.30	I	7	I In	AL	C	120.0	56.0	57.5	5.75.16	abcde	2-Ho	Pu	SP	U	Hs	4 Y	Hy	4.55 Sp	F	H	3584
XK120—3½ Litre	6 3.27x4.17	160-5000	210.0	7.00	I	7	I In	AL	C	102.0	51.0	50.0	6.00.16	abcde	2-Ho	Pu	SP	U	Hs	4 Y	Hy	3.64 Sp	F	H	2464
Jensen 8 P. C. 240	8 3.35x3.35	130-4300	235.5	7.25	I	9	I Se	AL	C	127.5	58.0	59.0	6.50.16		2-Up	Pu	SP	U	Hs	4 N	Wo	3.87 ta	F	◇	2128
Jowett Javelin	4 2.85x3.54	51-4000	90.9	7.20	O	3	I In	AL	C	102.0	51.0	49.0	5.25.16	abce	2-Do	Pu	SP	U	Hs	4 Y	Hy	4.87 ta	Tb	◇	2184▲
Lagonda 2½ Litre	6 3.07x3.54	105-5000	183.5	6.50	I	4	I Se	AL	C	113.5	56.4	56.7	6.00.16	abc	2-Ho	Pu	SP	U	Hs	4 Y	Hy	4.56 tt	A	H	3472▲
Lanchester LD10	4 2.50x4.00	40-3600	78.5	7.00	I	3	I In	AL	C	99.0	48.0	48.0	5.25.16	abce	1-Do	Pu	H	U	Pr	4 Y	SB	5.12 Sp	F	M	1344
Lea Francis MK V & VI	4 2.95x3.93	70-4800	108.0	7.25	I	3	I In	AL	Ch	111.0	51.5	51.4	6.00.16	abce	1-Ho	Pu	SP	U	Hs	4 Y	SB	4.87 Sp	N	M	1708
Pilot	4 2.95x3.93	67-5200	108.0	8.00	I	3	I In	AL	Ch	111.0	51.5	51.4	6.00.16	abce	1-Ho	Pu	SP	U	Hs	4 Y	SB	4.55 Sp	N	M	1708
Estate Car	4 2.95x3.93	70-4800	108.0	7.25	I	3	I In	AL	Ch	111.0	51.5	51.4	5.50.17	abce	1-Ho	Pu	SP	U	Ha	4 Y	SB	4.87 Sp	N	M	1708
1½ Litre	4 2.72x3.93	70-5200	91.5	8.00	I	3	I In	AL	Ch	99.0	51.5	51.4	5.25.17	abce	2-Ho	Pu	SP	U	Ha	4 Y	SB	4.87 Sp	N	M	1708
M. G. T. C. Midget	4 2.62x3.54	54-5200	76.3	7.20	I	3	I In	AL	C	94.0	45.0	45.0	4.50.19	abce	2-Do	Pu	SP	U	Hs	4 Y	SB	5.12 Sp		H	1456
TD Litre Saloon	4 2.62x3.54	54-4800	76.3	7.20	I	3	I In	AL	C	99.0	47.3	50.0	5.25.16	abce	1-Do	Pu	SP	U	Hs	4 Y	SB	5.14 Sp	F	H	1174
TD Litre Tourer	4 2.62x3.54	54-5200	76.3	7.20	I	3	I In	AL	C	99.0	47.3	50.0	5.25.16	abce	1-Do	Pu	SP	U	Hs	4 Y	SB	5.14 Sp	F	H	1174
Morgan 4 4	4 2.50x3.93	40-4300	77.3	7.00	I	3	I In	AL	C	92.0	45.0	45.0	5.00.16	abc	1-Do	Th	SP	Se	Hs	4 Y	SB	4.72 Sp	F	M	
3 Wheeler, 10HP	4 2.50x3.64	33-3500	71.5	6.20	I	3	L In	AL	C	99.0	50.0	"	4.00.16	abc	1-Do	Th	SP	Se	Hs	3 N	C	Sp	F	M	
Morris Minor	4 2.24x3.54	30-4400	56.0	6.70	I	3	L In	AL	C	88.0	50.3	50.3	5.00.14	abce	1-Ho	Th	SP	U	Hs	4 Y	Hy	4.55 Sp	F	H	1735▲
Oxford	4 2.89x3.43	41-4000	90.0	6.80	I	3	L In	AL	HI	97.0	53.0	53.0	5.50.15	abce	1-Ho	Pu	SP	U	Hs	4 Y	Hy	4.55 Sp	F	H	2300▲
Six	4 2.89x3.43	65-4600	135.0	7.00	I	4	lo In	AL	Ts	110.0	53.0	53.0	6.00.15	abce	1-Ho	Pu	SP	U	Hs	4 Y	Hy	4.10 Sp	F	H	2600▲
Riley 1½ Litre	4 2.72x3.94	55-4500	91.3	6.70	I	3	I In	AL	C	112.5		52.2	5.75.16	abce	1-Up		SP	U	Hs	4 Y	SB	4.88 Sp	F	H	2716▲
2½ Litre	4 3.17x4.72	100-4500	149.0	6.80	I	3	I In	AL	C	119.0		52.5	6.00.16	abce	2-Up		SP	U	Hs	4 Y	SB	4.11 Sp	F	H	3136▲
Rolls-Royce Silver Wraith	6 3.50x4.50		260.0	6.40	I	7	F In	AL	HI	127.0	58.5	60.0	6.50.17		1-Do		SP	U	Hs	4 Y	Hy	3.72 Sp	F	◇	
Rover 80	4 2.74x4.13	90-4000	97.3	7.04	I	3	F In	AL	C	110.5	51.5	56.0	5.75.16	abce	1-Do	Pu	SP	U	Hs	4 Y	SB	4.70 Sp	F		
75	6 2.57x4.13	72-4000	128.3	7.25	I	4	F In	AL	C	110.5	51.5	56.0	5.75.16	abce	1-Do	Pu	SP	U	Hs	4 Y	SB	4.70 Sp	F	M	3024
Singer 9HP	4 2.36x3.74	36-5000	66.5	6.90	I	3	I In	AL	C	91.0	45.0	45.0	5.00.16	abc	1-Do	Th	SP	U	Hs	3 Y	SB	5.43 Sp	N	M	945
Super 10	4 2.49x3.74	38-4800	72.8	6.50	I	3	I In	AL	C	95.0	48.0	48.0	5.30.16	abc	1-Do	Th	SP	U	Hs	4 Y	SB	5.43 Sp	N	H	1088
SM1500	4 2.87x3.54	48-4500	91.9	7.00	I		I In	AL	C	107.5	50.5	51.0	5.60.16	abce	1-Do	Pu	SP	U	Hs	4 Y	Hy	5.12 Sp	F	H	1242
Standard Vanguard	4 3.35x3.62	68-4200	127.6	6.70	I	3	I Iw	AL	C	94.0	51.0	54.0	5.75.16	abcde	1-Do	Pu	SP	U	Hs	3 Y	Hy	4.62 Sp	F	H	2716▲
Estate Car	4 3.35x3.62	68-4200	127.6	6.70	I	3	I Iw	AL	C	94.0	51.0	54.0	5.75.16	abcde	1-Do	Pu	SP	U	Hs	3 Y	Hy	4.62 Sp	F	H	2856▲
Sunbeam Talbot 90	4 2.95x4.33	64-4100	118.6	6.59	I	3	I In	AL	C	97.5	47.5	50.5	5.25.16	abce	1-Do	Pu	SP	U	Hs	4 Y	SB	4.30 Sp	N	H	1900
Triumph Roadster	4 3.35x3.62	68-4200	127.6	6.70	I	3	I Iw	AL	C	100.0	50.5	54.7	5.75.16	abcde	1-Do	Pu	SP	U	Hs	3 Y	Hy	4.62 Sp	F	H	2534▲
1800	4 2.85x4.13	63-4500	108.3	6.70	I	3	I In	AL	C	108.0	50.5	54.7	5.75.16	abcde	1-Do	Pu	SP	U	Hs	3 Y	SB	4.86 Sp	F	H	2814▲
Vauxhall LIX, LBX	4 2.74x3.74	35-3600	66.0	6.40	I	3	I In	AL	C	97.7	49.1	50.6	5.00.16		1-	Pu	SP	U	Hs	3	SB	4.62 Sp	F	H	
LIP, LBP	6 2.74x3.94	55-3300	138.8	6.75	I	4	I In	AL	C	97.7	49.6	50.0	5.25.16		1-	Pu	SP	U	Hs	3	SB	4.12 Sp	F	H	
Wolseley WOL. 15	4 2.89x3.43	51-4300	90.0	7.00	I	3	lo In	AL	Ts	102.0	53.0	53.0	5.50.15	abce	1-Ho	Pu	SP	U	Hs	4 Y	Hy	4.55 Sp	F	H	2580▲
6/80	6 2.89x3.43	72-4600	135.0	7.00	I	4	lo In	AL	Ts	110.0	53.0	53.0	6.00.15	abce	2-Ho	Pu	SP	U	Hs	4 Y	Hy	4.10 Sp	F	H	2860▲
FRENCH																													
Boitel	2 2.91x2.67			6.00							78.7		43.0																
Bugatti *57	8 2.83x3.93	135-4500	198.7			7	lo Se	AL	HI	130.0	53.0	53.0	5.50.18	abc	1-	Pu	SP	U	Hs	4 N	SB	4.18 ta	N	H	2200
Citroen 11BL	4 3.07x3.94	56	116.0	6.20	I	3	I In	AL	C	114.0		54.0	165.400	abc	1-		SP	U	Hs	3 N	SB		Ra	A	H	2281▲
15S	6 3.07x3.94	77	174.8	6.20	I	5	I In	AL	C	119.0		58.0	165.400	abc	1-		SP	U	Hs	3 N	SB		Ra	A	H	2794▲
	2		22.9		O	2	I In	AL	C	78.0		36.0	125.400	abc	1-		SP	U	Hs	4 N	SB		Ra	A	M	
Clavesu	8 2.50x3.30	90-4800	140.0	7.08	V	5	I In	AL	C	118.0		55.0	5.50.17	abce	1-		SP	U	Hs	5 Y	Hy	4.00 ta	A	H	2046▲

FOREIGN PASSENGER CARS

MAKE AND MODEL		ENGINE										GENERAL DATA								TRANSMISSION			REAR AXLE					
		Number of Cylinders, Bore and Stroke (In.)	Max. Brake Hp. at Specified R.P.M.	Piston Displacement (Cu. In.)	Compression Ratio (To-1)	Cylinder Arrangement	No. of Main Bearings	Valve Location	Crankcase Type	Piston Material	Camshaft Drive	Wheelbase (In.)	TREAD Front (In.)	TREAD Rear (In.)	Tires (In.)	Oil Pressure to—	Carburetor—No. Used and Type	Cooling System	Clutch Type	Location	Type	No. of Forward Speeds Synchronizing Clutches	Final Drive Type	Gear Ratio (to-1)	Torque taken by	Independent Suspension	Service Brake	Chassis Weight (Lb.)
FRENCH—*Continued*																												
Delage	D6	6-3.27x3.55	95	183.0	6.50	I	7	I	In	AL	C	124.0	....	57.0	5.50/17	abcd	1-	....	SP	U	E	4 Y	SB	....	Sp	F	H	2061
Delahaye	134N	4-3.15x4.10	55	131.0	....	I	5	I	In	AL	C	116.0	....	57.0	6.00/17	abcd	1-	....	SP	U	E	4 Y	SB	....	Sp	F	H	1716
....	135M	6-3.30x4.10	130	216.0	....	I	7	I	In	AL	C	116.0	....	58.0	6.00/17	abcd	1-	....	SP	U	E	4 Y	SB	....	Sp	F	H	2057
....	175	6-3.70x4.10	125	274.0	....	I	7	I	In	AL	C	116.0	....	58.0	6.00/18	abcd	1-	....	SP	U	E	4 Y	SB	....	Sp	F	H	2187
Ford	Vedette	8-2.59x3.10	65-4000	131.6	7.00	V	4	L	In	Als	HI	106.0	....	54.0	165/400	abc	1-	....	SP	U	Hs,	3 Y	SB	4.22	Sp	F	H	1570
Gregoire	R	4-3.38x3.38	64-4000	122.0	6.50	O	3	I	In	AL	C	96.4	....	56.8	5.50/16	abcd	2-	....	SP	U	Hs	4 Y	SB	3.20	ta	A	H	20904
Hotchkiss	684	4-3.38x3.93	70-4000	140.0	6.00	I	3	I	In	AL	C	115.0	....	56.6	6.40/16	abc	1-Do	....	SP	U	Hs	4 Y	SB	4.30	Sp	F	H	1700
....	686	6-3.38x3.93	105-4000	212.0	6.50	I	7	I	In	AL	C	121.6	....	56.2	6.40/16	abce	1-Do	....	SP	U	Hs	4 Y	SB	3.80	Sp	F	H	1980
Julien	MM5	1-3.07x2.67	10-4400	19.8	6.40	I	2	I	Se	AL	HI	72.0	....	32.6	4.00/12	abc	1-	....	SP	U	Hs	3 Y	SB	6.00	Sc	F	M	704
Mathis	M6	6-3.50x3.00	80-4000	174.0	6.50	O	4	L	In	AL	C	104.0	....	52.0	5.50/15	abc	2-	....	SP	U	Hs	6 Y	Hy	4.10	ta	A	H	2180
Panhard	Dyna	2-2.63x2.95	24-4000	37.2	6.00	O	2	I	Se	AL	C	83.0	....	48.0	135/400	abc	2-	....	SP	U	Hs	4 Y	SB	....	ta	A	M	1212‡
Peugeot	202	4-2.67x3.07	32-4000	69.1	6.80	I	3	I	In	AL	C	96.4	....	47.0	145/400	abce	1-	....	SP	U	Hs	3 Y	Wo	5.20	tt	F	H	835
....	203	4-2.95x2.48	40-4500	78.7	6.80	I	3	I	In	AL	C	101.5	....	51.8	155/400	abce	1-	....	SP	U	Hs	4 Y	Wo	5.70	tt	F	ϕ	20484
Renault	4N	4-2.16x2.36	19-4000	29.8	6.70	I	3	I	In	AL	C	83.0	....	47.0	135/400	abc	1-	....	SP	U	Hs	3 Y	SB	....	ta	A	H	1234
....	Juva	4-2.28x3.74	24-3500	39.4	6.50	I	3	I	In	AL	C	92.0	....	45.0	5.50/15	abc	1-	....	SP	U	Hs	3 N	SB	....	tt	F	H	1678
Rosengart	ST8	8-3.15x3.74	95-3600	299.0	6.20	V	3	L	In	Als	HI	122.0	....	59.0	205/400	abce	1-Do	....	SP	U	Hs	3 Y	SB	3.50	ta	A	H	1980
Rovin	D2	2-2.63x2.36	10-3000	25.7	6.30	O	2	L	Se	AL	C	67.0	....	35.4	2.70/80	abc	1-	....	SP	U	Hs	3 N	Hy	2.77	Sp	A	M	7704
Simca	(Fiat) 500	4-2.04x2.63	13-3600	34.7	6.00	I	2	L	In	AL	C	78.7	....	41.0	4.25/15	abce	1-	....	SP	U	Hs	4 Y	SB	4.80	Sp	F	H	10784
....	600	4-2.04x2.63	17-3600	34.7	6.50	I	2	I	In	AL	C	78.7‖	....	41.0	4.25/15	abce	1-	....	SP	U	Hs	4 Y	SB	4.80	Sp	F	H	11884
....	508	4-2.67x2.95	34-4000	66.4	6.00	I	3	I	In	AL	C	95.2	....	48.0	5.25/15	abce	1-	....	SP	U	Hs	4 Y	SB	4.60	Sp	F	H	18764
Talbot	T26	6-3.66x4.33	170-4200	273.5	7.00	I	7	I	In	AL	C	125.0	....	58.0	6.00/18	abcde	2-	....	SP	Se	Pr	4 N	SB	3.58	Sp	F	H	2530
....	T15	4-3.66x3.89	95-4200	164.0	7.00	I	5	I	In	AL	C	116.0	....	56.0	6.00/16	abcde	1-	....	SP	U	Hs	4 Y	SB	3.92	Sp	F	H	1980
Wimille		8-2.59x3.10	65-4000	131.6	7.00	V	4	I	In	Als	HI	106.0	....	54.0	5.50/15	abc	1-	....	SP	U	E	4 Y	IG	3.00	ta	A	H	1320
GERMAN																												
Opel	Olympia	4-3.15x2.92	39-3700	90.8	6.00	I	4	I	In	Als	HI	95.0	....	49.2	5.00/16	abcde	1-	....	SP	U	Hs	4 Y	SB	4.56	Sp	F	H	19804
....	Kapitan	6-3.15x3.23	55-3500	151.0	6.00	I	4	I	In	Als	HI	106.0	....	52.2	5.50/16	abcde	1-	....	SP	U	Hs	4 Y	SB	4.30	Sp	F	H	26404
ITALIAN																												
Alfa Romeo	6C2500S	6-2.83x3.93	90-4600	149.0	7.00	I	7	I	In	AL	C	118.1	57.1	57.9	6.50/17	....	....	Pu	SP	U	Hs	4 Y	SB	4.35	ta	A	H	....
Cisitalia	202	4-2.68x2.95	55-5500	67.1	7.50	I	3	I	Se	AL	B	94.5	49.6	49.6	5.50/15	abcde	1-Do	Pu	SP	Se	Hs	4 Y	SB	4.10	tt	F	H	1080
....	203	4-2.83x2.95	....	73.2	....	I	3	I	Se	AL	B	79.0	48.0	44.4	5.00/15	abcde	2-Do	Pu	SP	Se	Hs	4 Y	SB	....	tt	F	H	726
Fiat	500B	4-2.05x2.64	16-4400	34.8	6.45	I	2	I	Se	AL	C	78.7	43.9	42.6	4.25/15	abc	1-Do	Th	SP	U	Hs	4 Y	SB	4.87	Sp	F	H	1852
....	1100B	4-2.68x2.95	35-4400	66.5	6.10	I	4	I	Se	AL	C	95.2	48.5	48.3	5.00/15	abc	1-Do	Th	SP	U	Hs	4 Y	SB	4.66	Sp	F	H	1014
....	1500D	6-2.56x2.95	47-4400	91.1	6.10	I	4	I	Se	AL	C	110.2	52.1	53.8	5.50/15	abc	1-Do	Pu	SP	U	Hs	4 Y	SB	4.45	Sp	F	H	1279
....	1100S	4-2.68x2.95	51-5200	66.5	7.50	I	4	I	Se	AL	HI	95.2	48.5	48.3	5.00/15	abc	1-Do	Pu	SP	U	Hs	4 Y	SB	4.10	Sp	F	H	1124
Isotta Fraschini	8C	8-3.07x3.07	120-4800	181.8	7.00	V	5	I	In	AL	C	122.0	57.1	57.1	7.00/16	abc	1-Dd	Pu	SP	U	Hs	4 Y	SB	3.94	....	A	H	3197
Lancia	100A	4-2.56x2.68	29-4600	55.1	5.80	V	3	I	In	AL	C	94.5	46.2	46.5	5.00/16	abce	1-Do	Pu	SP	U	Hs	‡ N	Hy	5.10	Sp	F	H	1654
....	99	4-2.94x3.35	48-4300	90.1	5.75	V	3	I	In	AL	C	108.2	49.7	50.5	5.50/16	abcde	1-Do	Pu	SP	U	Hs	4 N	Hy	4.10	ta	A	H	948

ABBREVIATIONS

†—Front axle drive ratio.
‡—Four forward speeds plus overdrive.
*—Supercharged.
**—Three forward speeds plus overdrive
♣—Car Weight.
♣♣—Hand shift standard, preselective optional.
ϕ—Hydraulic Front and Mechanical Rear brakes.
●—Curb weight.
*—Rear only, one wheel.
a—Main bearings.
A—All four wheels.
AL—Aluminum Alloy.
Als—Aluminum Alloy with steel struts.
b—Camshaft.
B—Straight Bevel gear.
c—Connecting Rod bearings.
C—Chain.
Ca—Completely automatic turbo-transmitter.
Ch—Chain or Helical Gear.
CI—Cast Iron.
d—Piston Pins.
DD—Double Disc.
Dd—Dual Downdraft.
Do—Downdraft.
e—Chain or Timing gears.
E—Electric shift.
F—Front wheels.
F—Valves in Head and Side (F-Head).
H—Hydraulic (brakes).
(h)—Split; Integral with cylinders but separate wet liners.
Hc—Hand shift standard, Total Electromagnetically operated gear box optional.
Hl—Helical gears.
Hm—Hydro-Mechanical.
Ho—Horizontal.
Hs—Hand shift.
Hy—Hypoid.
I—In line (cylinders)
I—In head (valves).
IG—Internal Gear.
In—Integral with cylinders.
Io—In head with overhead camshaft.
Iw—Integral with cylinder water jacket
L—At side (L-Head).
M—Mechanical brakes.
N—No or None.
O—Horizontally Opposed (cylinders).
Pr—Preselective.
R—Rear Wheels.
SB—Spiral Bevel.
Sc—Shackles.
Se—Separate.
Sp—Springs.
SP—Single plate, Dry.
Sr—Spur Gear.
T—Independent Suspension on Front. Torsion bar on rear.
Ta—Torque arm.
Tb—Torsion bar both Front and Rear.
Th—Thermo-Syphon.
Tp—Thermo-Syphon or pump.
Ts—Twin skew gear with vertical shaft.
tt—Torque Tube.
Tt—Torsion bar on front, conventional on rear.
U—Unit with engine.
Up—Updraft.
V—"Vee" type.
We—Worm drive.
Y—Yes.



FOREIGN DIESEL AND

Line Number	ENGINE MAKE AND MODEL		Built under License from	GENERAL																			Shipping Weight (Lb.)	
				Designed for	Type	Number of Cylinders Bore and Stroke (In.)	Cylinder Liners—Type	Cycle	Piston Displacement (Cu. In.)	With Bare Engine: Max. Brake Hp. at Specified R.P.M.	With Standard Accessories: Max. Intermittent Hp. at Specified R.P.M.	With Standard Accessories: Continuous Sustained Hp. at Specified R.P.M.	Compression Ratio to 1	Max. Combustion Pressure (Lb. per Sq. In.)	B.M.E.P. at Continuous Hp. (Lb. per Sq. In.)	Weight per Continuous Hp. (Lb.)	Max. Torque in Lb. Ft. at Specified R.P.M.	Automotive or Industrial	Marine
	BRITISH																							
1	A.E.C.	A209-A210	....	M	TC	6 4.72x5.59	D	4	587.9	125-1800	110-1500	100-1500	16.00	900	91.5	31.0	360-1200	....	3100
2	....	A212	....	M	TC	6 4.72x5.59	D	4	587.9	125-1800	110-1500	100-1500	16.00	900	91.5	27.0	360-1200	....	2700
3	....	A173	....	T,B,Tr,R	DI	6 4.13x5.74	D	4	483.0	103-1800	103-1800	95-1800	16.00	1000	108	15.8	330-1150	1500	....
4	....	A208	....	T,B,Tr,R	DI	6 4.72x5.59	D	4	587.9	129-1800	129-1800	125-1800	16.00	1000	110	13.4	430-1000	1670	....
5	....	A211	....	I	TC	6 4.72x5.59	D	4	587.9	125-1500	110-1500	100-1500	16.00	900	91.5	....	360-1200	....	....
6	Bristol	AVW	....	B	DI	6 4.33x5.62	D	4	496.0	100-1700	....	....	16.00	....	93.5	....	337-1200	....	....
7	Coventry	Godiva-CD8	....	M	AC	4 3.25x4.13	D	4	137.1	....	30-2000	30-2000	17.50	980	86.5	47.1	87-1700	....	1415
8	•	Godiva-CD4	....	T,Tr	AC	4 3.25x4.13	D	4	137.1	....	45-2600	40-2400	17.50	980	104	13.7	90-2400	550	....
9	....	CD1	....	I	AC	1 3.25x4.13	D	4	34.26	6 50-1500	6.00-1500	5 50-1500	17.50	980	87.0	....	22½-1500	....	....
10	Crossley	HOE-Type 7	....	B	DI	6 4.50x5.50	D	4	525.0	....	100-1700	82-1200	15.70	900	101	17.7	388-1000	1458	....
11	....	‡HOE-Type 7	....	B	DI	6 4.50x5.50	D	4	525.0	....	115-1700	85-1200	15.70	930	105	13.8	375-1000	....	....
12	Daimler	CD6-MKIV	Own	T,B	DI	6 4.50x5.50	D	4	524.8	....	100-1600	....	15.00	1140	100	....	350-1200	1720	....
13	....	CD650	Own	B,T	DI	6 5x6½	D	4	648.0	125-1650	120-1600	100-1500	15.00	1150	100	20.0	450-820	2000	....
14	Dennis	O4	Own	T,B,Tr	DI	4 4.62x5.90	W	4	396.8	80-1800	77-1800	64-1600	14.00	1000	79.8	23.6	262-1000	1512	....
15	....	O6	Own	T,B,Tr	DI	6 4.13x5.74	W	4	462.0	100-1800	97-1800	80-1600	15.00	1000	85.5	21.0	352-1100	1687	....
16	....	5 Litre	....	T,B,Tr	DI	6 3.86x4.41	W	4	309.0	75-2000	72-2000	60-1800	16.00	1000	85.4	17.2	220-1000	1030	....
17	Foden	FD6	AW	Var	DI	6 3.35x4.73	W	2	250.0	....	126-2000	80-1600	14.00	1500	80	15.0	350-1600	1200	....
18	Gardner	4LK	Own	T	GA	4 4½x5½	D	4	232.0	57-2100	....	....	13.50	....	104	....	161-1100	684	....
19	....	*4LW	Own	T,R,I,M	GA	4 4½x6	D	4	340.0	68-1700	....	....	13.00	....	102	....	230-1000	1150	....
20	....	*4L3	Own	R,I,M	GA	4 5½x7½	♦	4	736.0	220-900	....	....	12.00	....	92	....	448-750	3080	....
21	Leyland	O-300	....	T,B,Tr,M,I	DI	6 3.80x4.50	D	4	306.0	75-2000	67-2000	51-1600	16.00	1000	100	18.3	210-1100	934	934
22	....	L	....	T,B,Tr,M,I	DI	6 4.37x5.00	D	4	451.0	100-1800	90-1800	74-1600	15.75	1000	100	21.5	325-1100	1595	1595
23	....	O-600	....	T,B,Tr,M,I	DI	6 4.90x5.50	D	4	597.0	130-1800	115-1800	94-1600	15.75	1000	100	17.2	410-900	1625	1625
24	McLaren	**MR4-2	....	M,I	TC	4 5.59x7.87	W	4	773.2	88-1000	97-1000	79-1000	16.50	750	90	48.6	522-800	3340	4500
25	Meadows	4DC-420	Own	T,B,M,R,I	DI	4 5.12x5.12	D	4	421.2	85-1900	80-1900	66-1600	15.50	1000	79	18.5	215-1000	1223	1667
26	....	6DC-630	Own	T,B,M,R,I	DI	6 5.12x5.12	D	4	632.0	130-1900	125-1900	100-1600	15.50	1000	79	18.6	320-1000	1568	2125
27	....	6IDC-970	....	T,Tr,B,R,I,M	DI	6 5.90x5.90	W	4	970.0	200-1750	190-1650	150-1500	15.50	1000	82	23.3	630-900	3500	....
28	Mirrlees	TVE	....	M,R,I	DI	12-8 ½x13¾	W	4	936.0	720-750	792-750	648-750	13.50	780	73.0	....	5250-550	....	....
29	....	TVTE	....	M,R,I	DI	12-8 ½x13¾	W	4	936.0	1050-750	1155-750	945-750	13.00	750	106	....	7650-575	....	....
30	Morris	CDD2	Saurer	T,B	DI	6-3.34x4.92	W	4	259.0	75-2400	....	....	19.00	....	....	....	167-1500	820	....
31	Perkins	Vehicle-P4	....	C,T,B,Tr,A	TC	4 3.50x5.00	D	4	192.4	46-2200	....	43-2200	16.50	900	86.1	11.3	123-1250	490♣	....
32	....	Indus.-P4	....	R,I	TC	4 3.50x5.00	D	4	192.4	34-1500	....	31-1500	16.50	900	93.5	25.2	123-1250	784	....
33	....	Vehicle-P6	....	C,T,B,Tr	TC	6 3.50x5.00	D	4	288.6	70-2200	....	67-2200	16.50	900	87.5	10.3	184-1250	896	....
34	....	Indus.-P6	....	R,I	TC	6 3.50x5.00	D	4	288.6	52-1500	....	49-1500	16.50	900	95.2	22.8	184-1250	1120	....
35	....	Marine-P6	....	M	TC	6 3.50x5.00	D	4	288.6	65-2000	....	65-2000	16.50	900	88.3	15.0	180-1300	....	980
36	....	Marine-P4	....	M	TC	4 3.50x5.00	D	4	192.4	....	....	43-2000	16.50	900	88.5	....	113-2000	....	810
37	Petter	AV-1	....	I	DI	1 3.15x4.33	W	....	33.7	....	....	....	19.00	1065	78.2	....	17.5	320	....
38	....	AV-2	....	I	DI	2 3.15x4.33	W	....	67.4	....	....	....	19.00	1065	78.2	....	35.0	455	....
39	Thornycroft	TR6	....	T	PC	6 3.56x4.12	D	4	246.5	65-2100	....	64-2100	18.20	1070	99.0	16.6	164-1550	1068	....
40	....	NR6	....	T	DI	6 4.12x6.00	D	4	480.6	100-1750	....	98-1750	16.00	915	94.0	17.1	322-1200	1680	....
	FRENCH																		
41	Berliet	MDF-2C	Ricardo	T,B,Tr	TC	4 4.30x5.90	W	4	348.0	70-1800	65-1800	50-1500	17.00	995	85.0	49.4	....	1470	....
42	....	MDB3R	Ricardo	T,B,Tr	TC	4 4.72x6.29	W	4	441.7	85-1650	80-1650	70-1500	16.50	995	91.0	21.6	286-1350	1474	....
43	....	MDER	Ricardo	T,B,Tr	TC	6 4.72x6.29	W	4	662.5	125-1650	120-1650	105-1500	16.50	995	89.6	24.1	405-1200	2530	....
44	Bernard	....	Gardner	T,B,Tr,I	TC	6 4.25x5.90	W	4	500.0	105-1700	....	....	15.00	....	....	....	....	1850	....
45	Citron	T45	Ricardo	T,B	TC	5 3.30x4.33	D	4	279.0	75-2500	....	....	16.30	924	....	....	170-	1267	....
46	Irat & Co.	DOG	Gro&Oil	T,B,Tr	....	2 4.00x4.90	W	4	132.0	31-2200	28-2500	24-2500	17.00	1066	91.0	....	....	....	....
47	....	....	Gro&Oil	M,I	....	4 4.00x4.90	W	4	264.0	75-2500	72-2500	44-2500	17.00	1066	91.0	....	....	....	....
48	....	....	Gro&Oil	M,I	....	6 4.00x4.90	W	4	396.0	115-2500	112-2500	64-2500	17.00	1066	91.0	....	....	....	....
49	Latil	H14	Own	T,B,Tr,R	DI	4 4.25x6.00	D	4	340.0	85-2000	80-2000	75-1850	14.00	....	....	41.8	235-	3140	....
50	Panhard	4HL	Lanova	T,B,Tr	DI	4 4.33x5.90	D	4	347.0	80-2000	....	....	15.00	995	89.6	....	217-1400	1243	....
51	Renault	505	Own	T,B,M,I	DI	4 4.91x6.69	W	4	509.0	....	85-1600	60-1200	15.60	1137	81.7	30.3	328-1200	1968	1980
52	Rochet-Schneider	455	Own	T,Tr,M	DI	4 4.52x5.90	D	4	380.0	75-1800	63-1800	52-1800	16.50	1137	....	29.4	234-1400	1528	....
53	....	465	Own	R	DI	6 4.52x5.90	D	4	570.0	105-1800	87-1800	73-1800	16.50	1137	....	27.1	325-1200	1980	....
54	Somua	D6104	Lanova	T,B,Tr	....	6 4.33x5.90	W	4	524.0	120-2000	....	....	15.50	853	89.6	....	340-1300	1540	....
55	Unic	ZU2	Own	T,B,Tr,M,R	TC	2 4.63x5.90	W	4	200.1	....	30-1450	26-1350	16.50	995	75.3	....	114-1200	....	....
56	....	ZU4	Own	T,B,Tr,M,R	TC	4 4.63x5.90	W	4	400.2	....	80-1900	52-1350	16.50	995	75.3	....	242-1200	....	....
57	....	ZU6	Own	T,B,Tr,M,R	TC	6 4.63x5.90	W	4	600.3	....	110-1750	78-1350	16.50	995	75.3	....	354-1200	....	....
	SWISS																		
58	Saurer	CBD	Own	....	....	4 3½x4½	W	4	173	48-2500	....	....	....	....	....	....	175-2000	....	616
59	....	CDD	Own	....	....	6 3½x4½	W	4	260	72-2500	....	....	....	....	....	....	155-1500	....	881
60	....	CRID	Own	....	....	4 4.3x5.5	W	4	324	69-1800	....	....	....	....	....	....	200-1400	970	....
61	....	CTID	Own	....	....	6 4.3x5.5	W	4	486	108-2000	....	....	....	....	....	....	320-1300	1235	....
62	....	CTIDL	Own	....	....	6 4½x5.5	W	4	486	135-1900	....	....	....	....	....	....	400-1300	1365	....
63	....	CHID	Own	....	....	8 4.3x5.5	W	4	648	140-2000	....	....	....	....	....	....	420-1300	1540	....
64	....	CVD	Own	....	....	12 4½x5.5	W	4	972	230-2200	....	....	....	....	....	....	650-1200	2200	2645
65	....	CVDL	Own	....	....	12 4½x5.5	W	4	972	300-2200	....	....	....	....	....	....	850-1200	2535	2975

ABBREVIATIONS

*—Includes reverse and reduction gears.
**—15% Nickel H.T.
†—Also available in 1, 2, 3, 5, 6, 8 Cyl. Models.
♣—Also available in 3, 5, 6, 8 Cyl. Models.
♣♣—Also available in 2, 3, 5, 6 Cyl. Models.
‡—To top.
‡‡—No flywheel.
♦—Exclude Flywheel, Fly. Hsg. and starter ring.
¶—Fitted with wet and special dry liners.
*—To face of flywheel.
AC—Air chamber.
AE—Air-Electric.
Ala—Aluminum alloy.
Aly—Alloy.
AW—Armstrong Whitworth (Radency).
B—Buses.
C—Car.
C—Closed.
C-B—C.A.V. or Bryce
C-G—C.A.V.-Gardner.
CI—Cast Iron.
CN—Chrome Nickel.
C-O—C.A.V.-Own.
C-S—C.A.V. or Simms.
D—Dry liners used.

OTHER HEAVY OIL ENGINES

Arrangement	Valves: Intake Port Diameter and Lift (in.)	Valves: Exhaust Port Diameter and Lift (in.)	Pistons: Material	Pistons: Length	Pistons: Weight with Rings and Pin (Lb.)	Pistons: No. of Compression Rings	Pistons: No. of Oil Rings	Piston Pin: Diameter and Length (in.)	Piston Pin: Locked in—	Connecting Rods: Material (S.A.E. No.)	Connecting Rods: Center to Center Length (in.)	Connecting Rods: Weight with Cap and Bushing (Lb.)	Main Bearings: Number	Main Bearings: Diameter (in.)	Injection System: Make of Pump	Injection System: Make of Valve	Injection System: Valve Type, Open or Closed	Injection System: Orifices	Injection System: Pressure-Nozzle Opening (Lb. per Sq. in.)	Starting Method: Make	Starting Method: Type	Overall Dimensions: Length—Fan to Flywheel (In.)	Overall Dimensions: Width (In.)	Overall Dimensions: Height—To Top of Air Cleaner (In.)	Line Number
BRITISH																									
VI	2.12-.480	1.87-.480	Ala	5.82	5.50	3	1	1.58-4.16	F	3435	11.40	7.50	7	3.35	C-S	C-S	C	Pi	1543	C-S	Ele	84⅛•	38⅛	40⅞	1
VI	2.12-.480	1.87-.480	Ala	5.82	5.50	3	1	1.58-4.16	F	3435	11.40	7.50	7	3.35	C-S	C-S	C	Pi	1543	C-S	Ele	67½	40½	50	2
VI	1.49-.322	1.26-.327	Ala	5.90	4.75	3	1	1.58-3.50	F	3435	10.70	6.50	7	3.38	C-S	C-S	C	Mu	2572	C-S	Ele	52⅞	29	42⅛	3
VI	1.57-.480	1.49-.480	Ala	6.83	6.50	3	1	1.58-4.15	F	3435	11.40	7.50	7	3.75	C-S	C-S	C	Mu	2572	C-S	Ele	54⅛	31	52⅛	4
VI	2.12-.480	1.87-.480	Ala	5.82	5.50	3	1	1.58-4.16	F	3435	11.40	7.50	7	3.35	C-S	C-S	C	Pi	1543	C-S	Ele	84⅛	45	68½	5
VI	1.62-.820	1.62-.500	Sil	6.72	5.50	3	2	1.62-3.65	F	Sil	11.25	7.00	7	3.62	C-S	C-S		Mu	2250	C-S	Ele	54	30	44⅛	6
VI	1.28-.337	1.15-.337	Aly	4.27		3	1	1.00-2.83	F	**	8.81	3.25	5	2.25	C.A.V.	C.A.V.	C	Pi	1600	C.A.V.	H-E	41⅛•	25⅛	38⅛	7
VI	1.28-.337	1.15-.337	Aly	4.27		3	1	1.00-2.83	F	**	8.81	3.25	5	2.25	C.A.V.	C.A.V.	C	Pi	1600	C.A.V.	H-E	32½	21	33½	8
VI	1.22-.325	1.22-.325	Ala	4.27	1.91	3	1	1.00-2.83	F		8.81	3.25	3	2.56	C-B	C-B	C	Pi	1600		Han	21⅛	20	31½	9
VI	1.75-.437	1.62-.437	Ala	6.06	5.37	4	2	1.50-3.81	F		12.81	8.06	7	3.62	C-S	C-S	C	Mu	2425	C-S	Ele	52⅛	28⅞	45⅞	10
VI	1.75-.437	1.62-.437	Ala	6.06	5.37	4	2	1.50-3.81	F		12.81	8.06	7	3.62	C-S	C-S	C	Mu	2425	C-S	Ele	52⅛	28⅞	45⅞	11
VI	1.81-.451	1.62-.451	YA	5.86	5.87	4	2	1.75-3.94	F	2335	10.50	7.35	7	3.35	C-S	C-S	O	Mu	2200	C-S	Ele	55½	28.72	47.2	12
VI	1.81-.45	1.62-.45	YA	6.49	8.25	4	2	1.75-4.16	F	EN16T	10.50	7.40	7	3.75	C-S	C-S	O	Mu	2200	C-S	Ele	58½	28.72	47½	13
VI	1.31-.524	1.14-.389	SAA	6.83	6.84	4	2	2.00-3.62	F	4037	12.56	11.5	5	3.37	C-S	C-S	C	Mu	2570	C.A.V.	Ele	44⅛	31⅜	52⅛	14
VI	1.31-.438	1.06-.438	SAA	6.46	5.09	4	2	1.50-3.34	F	4037	11.12	8.70	7	3.37	C-S	C-S	C	Mu	2200	C.A.V.	Ele	50⅛	23½	45⅛	15
VI	1.31-.408	1.25-.408	SAA	5.25	3.90	3	2	1.37-3.25	F	4037	7.75	4.85	7	3.12	C-S	C-S	C	Mu	2200	C.A.V.	Ele	47⅞	23⅞	38⅛	16
VI			CI	5.75	5.30	3	2	1.62-2.80	F	DF	9.50	4.10	7	3.00	C.A.V.	C.A.V.	C	Si	2250	Sim	H-E	46	29⅛	38⅞	17
...			Ala										5		C-G		C	Mu	2500		H-E				18
...			Ala										5		C-G		C	Mu	2500		H-E				19
			Ala										5		C-G		C	Mu	2500		HEC				20
VI	1.30-.383	1.30-.383	Ala	5.53	3.53	3	2	1.30-3.25	F	EN16S	8.80	5.48	7	2.90	C.A.V.	Ley	C	Mu	2350	C.A.V.	Ele	41⅜	22⅛	38⅛	21
VI	1.93-.458	1.55-.458	Ala	5.75	5.00	4	1	1.62-1.37	F	EN16S	10.50	6.36	7	3.27	C.A.V.	Ley	C	Mu	2350	C-S	Ele	49⅛	30.91	44.57	22
VI	1.90-.494	1.80-.494	Ala	6.60	6.81	3	2	1.62-4.20	F	EN16S	10.50	9.85	7	3.50	C.A.V.	Ley	C	Mu	2350	C-S	Ele	52⅛	30⅛	45.44	23
VI	1.89-.697	1.89-.697	Ala	8.58	10.5	4	1	1.77-4.91	F	NS	15.15	22.0	7	3.34	Bryce	Bryce	C	Pi	1500	C-O	AE	62½	30	62½	24
VI	2.47-.550	2.12-.550	YA	6.47	7.30	3	2	1.73-	F	NCM	9.87	8.00	5	3.35	C.A.V.	C.A.V.	C	Mu	2500	C.A.V.	Ele	39¼	27⅛	43½	25
VI	2.12-.550	1.68-.550	YA	6.47	7.30	3	2	1.73-	F	NCM	9.87	8.00	7	3.35	C.A.V.	C.A.V.	C	Mu	2500	C.A.V.	Ele	50⅛	27⅛	43⅛	26
VI	1.81-.450	1.44-.450	YA	7.87	13.0	3	2	2.37-4.94	F	NCM	11.0	17.0	7	4.25	C.A.V.	C.A.V.	C	Mu	2500	C.A.V.	EA	64.6	31	47.5	27
VI	2.75-.750	2.50-.750	Ala	11.71	39.0	3	2	3.00-7.37	F	EN8	29.56	78.0	7	7.50	Bryce	Bryce	C	Mu	2100	Own	Air	128	58	90	28
VI	2.75-.750	2.50-.750	Ala	11.46	38.0	3	2	3.00-7.37	F	EN8	29.68	78.0	7	7.50	Bryce	Bryce	C	Mu	2100	Own	Air	138	58	90	29
VI	1.38-.383	1.22-.383	Ala	4.64	2.70	4	2	1.37-2.72	F	EN21	9.87	4.80	7	3.06	C.A.V.	C.A.V.	C	Si	2350	C.A.V.	Ele	38⅝	22½	42⅛	30
VI	1.40-.347	1.18-.347	YA	4.25	2.55	2	2	1.25-2.96	F	3240	9.00	3.70	5	2.75	C.A.V.	C.A.V.	C	Mu	1764	C.A.V.	Ele	24⅜	23⅛	38	31
VI	1.40-.347	1.18-.347	CI	4.25	4.42	3	2	1.25-2.96	F	3240	9.00	3.70	5	2.75	C.A.V.	C.A.V.	C	Mu	1764	C.A.V.	Ele	34½	23¼	34⅛	32
VI	1.40-.347	1.18-.347	YA	4.25	2.55	2	2	1.25-2.96	F	3240	9.00	3.70	7	2.75	C.A.V.	C.A.V.	C	Mu	1764	C.A.V.	Ele	34⅜	23⅛	39⅛	33
VI	1.40-.347	1.18-.347	CI	4.25	4.42	3	2	1.25-2.96	F	3240	9.00	3.70	7	2.75	C.A.V.	C.A.V.	C	Mu	1764	C.A.V.	Ele	42⅜	23⅛	34⅜	34
VI	1.40-.347	1.18-.347	YA	4.25	2.55	3	2	1.25-2.96	F	3240	9.00	3.70	7	2.75	C.A.V.	C.A.V.	C	Mu	1764	C.A.V.	Ele	52⅛	24	34½	35
VI	1.40-.348	1.18-.348	YA	4.24	2.56	3	2	1.25-2.96	F	3240	9.00	3.70	5	2.75	C.A.V.	C.A.V.	C	Mu	1764	C.A.V.	Ele	48⅛	24⅛	34½	36
VI	1.15-.437	1.15-.437	Ala	4.58	2.10	3	1	1.18-2.60	F	EN12	9.13	4.50	2	2.25	Bryce	Bryce	C	Si			Han	29⅛	18	28⅛	37
VI	1.15-.437	1.15-.437	Ala	4.58	2.10	3	1	1.18-2.60	F	EN12	9.13	4.50	2	2.25	Bryce	Bryce	C	Si			Han	36⅛	18	28⅛	38
VI	1.43-.393	1.25-.393	Ala	4.34	2.68	3	2	1.25-3.00	F	4130	8.00	3.75	7	2.50	C.A.V.	C.A.V.	C	Pi	1600	C.A.V.	Ele	41⅝•	22½	45	39
VI	1.62-.510	1.43-.510	Ala	5.32	4.18	3	2	1.37-3.58	F	4130	13.00	7.75	7	3.50	C.A.V.	C.A.V.	C	Mu	2900	C.A.V.	Ele	50⅞	23⅝	43¼	40
FRENCH																									
I	1.85-.400	1.65-.400	Ala	6.80	5.89	3	2	1.53-3.70	F	35CD4			5	3.14	Lav	Lav	C	Pi	1422	PR	Ele	45.2	25.5	43.1	41
I	1.85-.400	1.65-.400	Ala	6.80	7.30	3	2	1.77-4.00	F	35CD4			5	3.14	Lav	Lav	C	Pi	1422	PR	Ele	49.1	29.9	39.8	42
I	1.96-.440	1.81-.440	Ala	6.80	7.30	3	3	1.77-4.00	F	35CD4			7	3.14	Lav	Lav	C	Pi	1422	PR	Ele	65	29.9	45.2	43
I			Ala			4	2						7								Ele	54.6	25	44	44
I	1.54-.390	1.29-.390	Ala	5.52	3.08	3	2	1.29-3.07	F	1035	8.85	5.18	7	2.91	Lav	Lav	C	Pi	1422	Own	Ele	47.2	31.4	39.3	45
I	1.69-.450	1.37-.450	Ala	5.80	4.71	4	2	1.49-	F		9.05	7.10	3	3.14	Lav	Lav	C	Pi	2133	Lav	Ele	25	21	39	46
I	1.69-.450	1.37-.450	Ala	5.80	4.71	4	2	1.49-	F		9.05	7.10	5	3.14	Lav	Lav	C	Pi	2133	Lav	Ele	34	21	39	47
I	1.69-.450	1.37-.450	Ala	5.80	4.71	4	2	1.49-	F		9.05	7.10	7	3.14	Lav	Lav	C	Pi	2133	Lav	Ele	45	21	39	48
I	2.04-.484	1.81-.421	Ala	5.64	4.40	4	2	1.43-3.79	F		11.00	5.85	5	3.26	Lav	PM		Mu		Bosch	Ele	43	28.5	51	49
I			Ala	5.90	3.71	3	1	1.57-3.70	F		11.80	4.45	5	3.40	PM	PM	C	Si	2062	PR	Ele	40	25.5	41	50
I	1.96-.400	1.96-.400	Ala	7.28	8.05	4	1	1.77-4.00	F		14.56	10.8	5	3.77	Own	Own	C	Mu	2844	Own	Ele	45.2	28.5	44.4	51
I	1.57-.450	1.77-.450	Ala	6.00	6.93	4	2	1.41-3.85	F	CN	11.91	9.90	5	3.34			C	Pi	2488		Ele	41	24.8	42.4	52
I	1.77-.450	1.77-.450	Ala	6.00	6.93	4	2	1.41-3.85	F	CN	11.91	9.90	7	3.34			C	Pi	2488		Ele	54	28.3	44.2	53
I	1.80-.470	1.65-.470	Ala	5.90	4.84	3	1	1.57-3.70	F	CN	11.80	6.30	7	3.46	PM	PM	C	Pi	2133	Lav	Ele	49.3	27.9	43.3	54
I	1.69-.470	1.45-.470	Ala	6.70	5.50	4	2	1.57-3.89	F	CN	11.50	11.0	3	3.34	PM	PM	C	Mu	2844	Lav	Ele	36.3	19.7	39.3	55
I	1.69-.470	1.45-.470	Ala	6.70	5.50	4	2	1.57-3.89	F	CN	11.50	11.0	5	3.34	PM	PM	C	Mu	2844	Lav	Ele	47.6	27.1	44.4	56
I	1.69-.470	1.45-.470	Ala	6.70	5.50	4	2	1.57-3.89	F	CN	11.50	11.0	7	3.34	PM	PM	C	Mu	2844	Lav	Ele	59.6	27.9	43.6	57
SWISS																									
VI			Ala										5		Own	Own					Ele	31	25.5	35	58
VI			Ala										7		Own	Own					Ele	40	23.6	24.8	59
VI			Ala										5		Own	Own					Ele	38	22	41	60
VI			Ala			4	1						7		Own	Own					Ele	69	28.7	40.3	61
VI			Ala			4	1						7		Own	Own					Ele	69	28.7	40.3	62
VI			Ala			4	1						5		Own	Own					Ele	68½	37	39	63
VI			Ala			4	1						5		Own	Own					Ele	70	37	39	64
VI			Ala			4	1						7		Own	Own					Ele	82	36	38	65

DF—Drop forging.
DI—Direct injection.
EA—Electric-Aux. gas engine.
Ele—Electric.
F—Floating.
GA—Gardner open chamber.
Han—Hand.
H-E—Hand or electric.
HEC—Hand-electric or compressed air.
I—Industrial.
Lav—Lavalette.
Ley—Leyland.
M—Marine.
Mu—Multiple.
NCM—Nickel Ch. Mo. Steel.
NS—Nickel Steel.
O—Open.
PC—Precombustion chamber.
Pi—Pintle.
PM—Precision Mecanique.
PR—Paris Rhone.
R—Railcars.
SAA—Silicon Aluminum Alloy-Anodized.
Si—Single.
Sil—Silicon "Lo-Ex".
Sim—Simms.
T—Trucks.
TC—Turbulence chamber.
Tr—Tractors.
Var—Various.
VI—Vertically in-head.
W—Wet liners.
YA—Special "Y" alloy heat treated

Roomier Bodies and New Chassis Features on

'49 Chrysler Models

FOR 1949 Chrysler offers six lines of cars, comprising the Royal with four body types and Windsor with six body types, both powered with the improved six-cylinder engine; and in the eight-cylinder chassis the Saratoga with two body types, New Yorker with four, and the Crown Imperial with two body types. In addition, the eight-cyl. line will feature the Town-and-Country series club coupe and convertible coupe.

Outstanding feature is the introduction of modernly-styled bodies having more interior room and wider seats, lower roof height, and less overall height and shorter bumper-to-bumper. Despite the reduction in overall length, wheelbases of all models except the Crown Imperial have been increased by four in. Details of wheelbase, seat width, and body types will be found in the appended table.

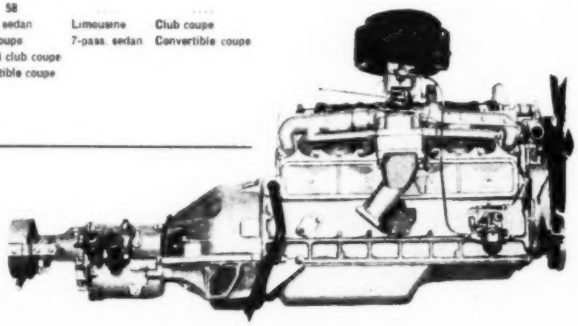
Front and rear fenders are readily detachable, as previously, thus simplifying replacement. An added feature is the application of undercoating at the factory to provide sound-deadening as well as protection against corrosion.

The line is replete with new mechanical features and improvements, although most of the basic mechanical specification details remain unchanged. For one

(*Turn to page 274, please*)

New Model Measurements

	Royal	Windsor	Saratoga	New Yorker	Custom Imperial	Town and Country
Wheelbase (in.)	125½	125½	131½	131½	145½	131½
Engine rating	116 hp @ 3600	116 hp @ 3600	135 hp @ 3200 rpm		135 hp @ 3200 rpm	
Seat width (in.)						
Front	58	58	58	58		
Rear	58	58	58	58		
Body types	4-door sedan	4-door sedan	4-door sedan	4-door sedan	Limousine	Club coupe
	7-pass. sedan	7-pass. sedan	Club coupe	Club coupe	7-pass. sedan	Convertible coupe
	Club coupe	Club coupe		Special club coupe		
	Station wagon	Convertible coupe		Convertible coupe		
		Special club coupe				
		Limousine				



(Right) Right side view of the eight-cyl power plant showing the new fuel pump and the improved fluid drive transmission.

(Below) Windsor four-door sedan. It is powered by a six-cyl 116-hp engine and has a wheelbase of 125½ in.

"No, no, Johnson! That slip-resistant *4-Way* Safety Plate goes on the *floor*!"

INLAND STEEL

GRIPS FEET LIKE A GEAR TOOTH
PREVENTS COSTLY SLIPS AND FALLS

Your men may not care about walking on walls, but it's a cinch they're a lot safer with Inland 4-WAY Safety Plate under foot. 4-WAY—on floors, walkways, ramps, platforms, steps—grips feet and wheels firmly in all directions. Its safety-lug pattern helps cut accidents and reduce lost man hours in your plant and on your products.

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Inland 4-WAY* SAFETY PLATE

*Reg. U. S. Pat. Off.

Plymouth's 1949 special deluxe club coupe on the 118½-in. wheelbase chassis.

1949 Plymouths—

Their New Styling and Mechanical Improvements

IN making its bid for the low price market, Plymouth offers its 1949 line (see AUTOMOTIVE INDUSTRIES, Feb. 1, page 38) on two different chassis—the higher priced 118½-in. wheelbase chassis, up 1½ in.; and the lower-priced 111-in. chassis, six inches shorter than the 1948 wheelbase. The deluxe series on the 118½-in. wheelbase comprises a club coupe and a four-door sedan while the special deluxe series on the same chassis carries the club coupe, four-door sedan, convertible coupe, and the station wagon. The deluxe group on the 111-in. wheelbase includes a two-door sedan, a three-passenger coupe, and the Suburban, the latter a new body type for Plymouth.

While wheelbase has been increased to 118½ in., overall length of the car has been decreased. Although narrower and lower the new bodies provide more interior room, sedan seats are five in. wider in front and six in. wider in the rear. Increased visibility is provided with an increase of 37 per cent in windshield area, 35.4 per cent increase in rear window opening, and with windshield wipers clearing 61.5 per cent greater area.

Plymouth features many improvements in mechanical design details, although the major elements of the car remain unchanged so far as specifications are concerned. Engine performance and efficiency have been improved with the introduction of a new cylinder head which increases the compression ratio to 7 to 1. The ratio was 6.6 to 1 last year. The increase in compression ratio coupled with other changes has stepped output to 97 hp at 3600 rpm, an increase of two horsepower over that of last year's engine.

The engine has a new intake manifold which is said to promote quicker and smoother warm-up and faster response to throttle opening. A new automatic electric choke, of the same type used on other Chrysler Corp. cars, has been added. In addition, Plymouth has adopted the combination ignition and starter switch which is standard on all Chrysler Corp. cars. The cable from this switch through to the engine compartment is armored to prevent tampering.

A radical change has been made in piston ring setup with the introduction of a chromium plated top ring and improved oil rings.

The electrical system has been improved with the adoption of the splash-proof distributor, combining a 10,000-ohm resistor in the cap for reducing interference with radio and TV reception. At the same time this permits use of a wider initial spark plug gap, resulting in improved idling and better low speed, light load operation.

Headlights now are equipped with a bulls-eye lens in the center of the sealed-beam lens to provide increased light output. A new enclosed circuit breaker, interchangeable with those used on other Chrysler Corp. cars, replaces the fuses used heretofore.

While the suspension system remains substantially unchanged, better riding is promised by the use of diagonally mounted shock absorbers at the rear, and

(*Turn to page* 284, *please*)

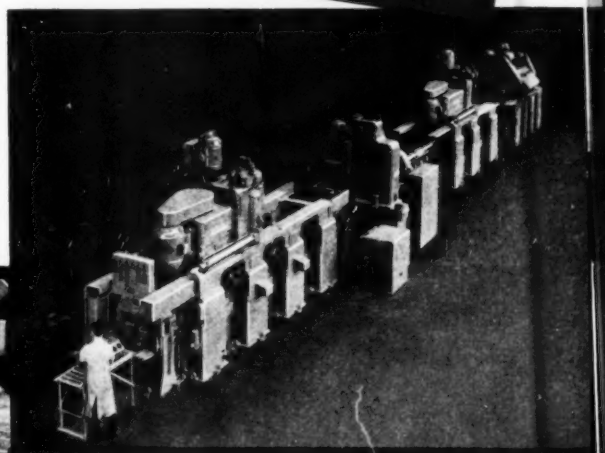
INGERSOLL PROCESS MACHINES
For Reducing the MAN HOURS per piece

Another COST-CUTTING Application of VICKERS HYDRAULICS

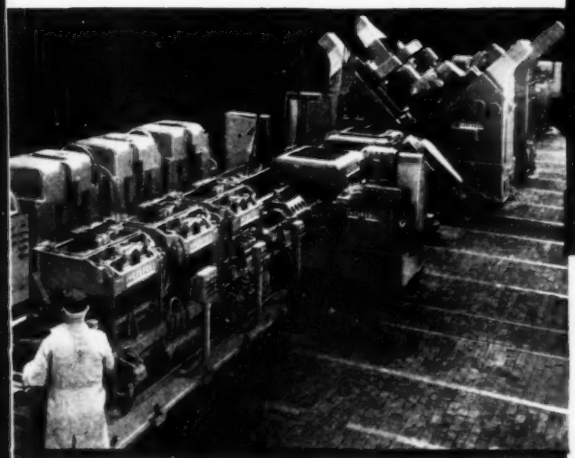
The two Ingersoll Process Machines illustrated here are being used for completely machining automobile cylinder blocks . . . they provide the extreme precision required and at the same time reduce the cost. It is significant that Ingersoll selected Vickers Hydraulic Controls for the many operations that can best be done with hydraulics.

Progression of the blocks through the machines is accomplished automatically, the time-saving transfer mechanisms being hydraulically actuated. Hydraulic circuits of the individual units provide for correct sequential positioning, clamping, traversing, feeding and returning. Interlocks assure accurate positioning, secure clamping and removal of interfering transfer members before cutting operations begin . . . also clearance of all cutters before transfer to next station can take place. Objectionable deflection is prevented by limiting the clamping pressure.

Get in touch with the nearest Vickers Application Engineering Office for information on how Vickers Hydraulics can improve your products.



Ingersoll 9-Station Process Machine has Vickers Hydraulic Controls to help secure extreme precision in cylinder blocks at lowest cost.



Ingersoll 11-Station Process Machine receives cylinder blocks from machine at right and similarly has Vickers Hydraulic Controls.

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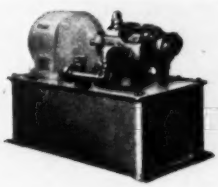
Pressure Controls, Bulletin 45-34a

Flow Control Valve, Bulletin 45-35

4-Way Valve, Pilot Operated, Solenoid Controlled, Bulletin 48-27



Power Unit, Bulletin 46-43a

AIRBRIEFS

By ROBERT McLARREN

Radar Net

It is a comfort to know that the House Armed Services Committee subcommittee has approved an Air Force plan for a $160,750,000 radar air warning network across North America and even extending out on ships several hundred miles from the mainland. But to the nervous citizen it is less than a comfort to know that we do *not* have even the semblence of such an early warning network right now! As any good aeronautical engineer will tell you —10,000 miles is about as far as *anything* is going to fly with enough bomb load to make an impression on present power plants and that means that the Russians will have to come over the North Pole to hit industrial U. S. cities. Since that is a main highway we would have thought that some attention had been paid to providing a few traffic cops along the way. But Maj. Gen. Gordon P. Saville, in his testimony on the measure, revealed that our warning protection along this highway is "almost a blank." It's a safety precaution developing 10,000-mile bombers to "strike at the Eurasian heartland" but what the taxpayer is probably more interested in is "keeping those guys away from here." Air Force says the net would cost $85,500,000 for obtaining the land and building the installation; $68,250,000 for purchase of the required radar equipment and $7,000,000 for the four Navy radar picket ships to extend the net to sea east and west of the mainland. We're in hearty agreement with the House Armed Services subcommittee and we think the sooner the better!

Stockpile Towers

Air Force has gone quietly about its business of accumulating a target quantity of 40,000 machine tools and its Industrial Planning Division, Air Material Command reveals that about 30,000 are now safely under lock and key. In addition, Industrial Equipment Branch has delivered 2226 machine tools to the industry for current use. USAF estimates that it used about 175,000 machine tools during World War II, the Navy using 75,000 for Navy aircraft production. The machine tool stockpile is now stored in Government-owned plants at Marietta, Ga. (operated during the war by Bell Aircraft) and Omaha, Nebr. (operated during the war by Glenn L. Martin). About 10 percent of the tools are 15 years old or more but machine tool experts point out that standard machine tools ignore their age with hundreds of World War I lathes, presses, etc. seeing plenty of active service during World War II. Theory is, of course, that these tools will be ready for distribution in the event of a national emergency requiring rapid expansion of aircraft production, which was delayed at the start of World War II by machine tool shortages in many plants.

Airline Airing

"Everybody talks about the airlines but nobody does anything about them" is not true any longer with the opening of a thorough Congressional investigation into the situation. Repeated proddings and some fits and starts by the Civil Aeronautics Board became bogged down until Senator Johnson (Dem., Colo.), chairman of the Senate Interstate and Foreign Commerce Committee, decided to launch a full-fledged investigation. The Committee approved $50,000 for the investigation and declared that a "long-range solution" should be sought to the problem. The resolution pointed out that "Financial distress has been experienced by many airlines during a period of general business prosperity" and indicated that any future decline in the general business level would only aggrevate this distress. Due for prominence in the hearings are the nonscheduled airlines, who have been pulled and hauled so severely by CAB in the past three years. But little relief for their plight is foreseen since Sen. Johnson endorses the CAB position opposed to direct competition between scheduled and non-scheduled operators.

One Row Or Two?

After exhaustive study and committee compromise the joint Air Force-Navy-Civil Subcommittee on Visual Aids to Navigation worked out a slope line system of airport runway approach lighting that utilized two rows of lights so arranged as to present straight lines before the pilot when his approach was correct and broken lines if his approach was incorrect. Tests at the CAA Experimental Station at Indianapolis proved the efficacy of the system. Now comes Air Line Pilots Association to turn thumbs down on the idea. And since ALPA represents 7000 airline pilots, who will be required to fly the final system, their voice is being heard. The pilots insist flatly on a single row of lights. They point out that in really bad weather the pilot may often see only three or four lights down below, which with two rows he would have to interpret as the "right" or "left" row and make corrections to his approach accordingly. With a single row there would be no question; he simply "straddles" the row and comes on in. As one ALPA member puts it: "If it's clear enough to see two long rows stretched out in front of you, then you don't need any approach lights at all!" With about $10 million worth of lighting equipment to be installed under the program, its practicality had best be determined beforehand.

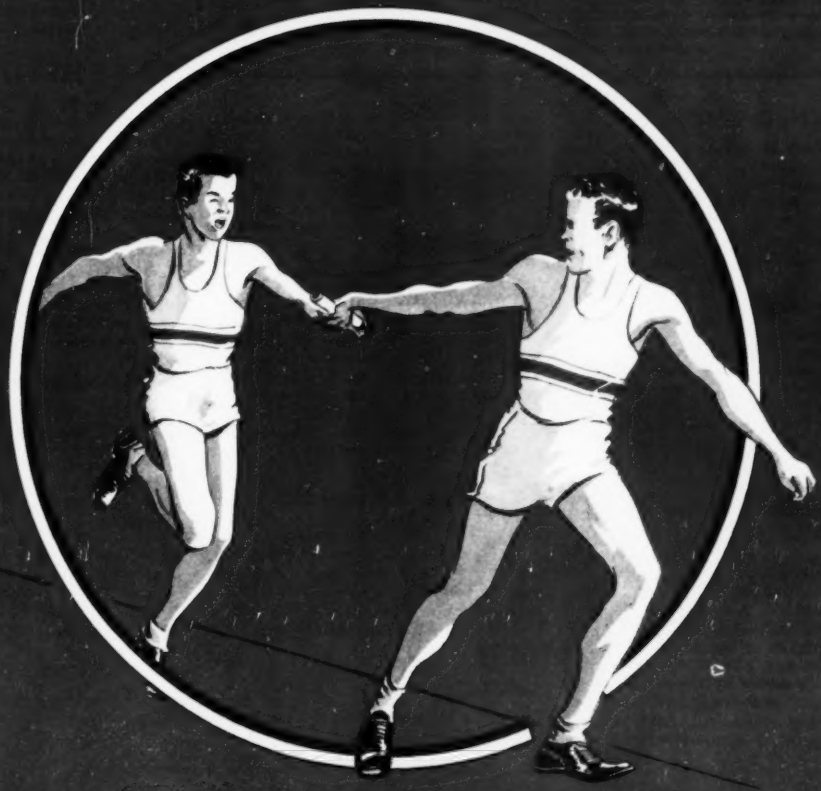
Supersonic Laymen

To the casual aviation reader, such high-sounding phrases as "wave drag," "spanwise flow," "cosine of sweep angle," etc. may sound like a description of an oscillating electric fan. His appreciation of the astonishingly complex problems posed by steady supersonic flight may be somewhat less than that of automatic transmissions. But one look at the Air Force's new stable of sonic-speed fighter planes should make it clear that there is not yet "one best way" of doing the job. For example, Convair's "Model 7002" (a test model of its XF-92 fighter) features a "delta-wing" layout in which the wing is shaped like a triangle with its apex forward. Republic's radical new XF-91 features a swept wing in which the tip chord is greater than the root chord, each wing panel being "turned around" so-to-speak. Lockheed's XF-90 fighter uses the more conservative swept wing. With such a myriad assortment of wing planforms it should be obvious that even exhaustive wind tunnel tests and theoretical calculations have not solved the problem of the "best" supersonic wing. But all of these new fighters, at least one of which will be ordered for production to equip the USAF supersonic fighter force scheduled by 1952, have one thing in common: a standard turbojet power plant for normal flight and a battery of rocket motors for fast acceleration, either for takeoff, fast climb, or a quick thrust through the sonic region. While there is obvious disagreement on the wing shape required for the job, everyone seems agreed that tremendous power is needed, even if fuel consumption limits this power to only a few precious minutes.

Two-Seaters Doomed?

William T. Piper may or may not be a true oracle in the personal aircraft field but when the old master speaks out it's usually on a subject he knows better than anyone: selling private airplanes. Piper now says flatly that the

(*Turn to page* 284, *please*)



We're on your team

Automotive production is like a relay race. We're on your team. Handed a rough assignment, our engineers run with it. Whether the going is easy or hard, we're proud of the part we have played in keeping your cars rolling extra economical miles to please your customers. Today's Sealed Power organization and facilities are the results of 38 years of close teamwork with you. They are the finest in our history. You are invited to use them to help make your good engines even better.

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PUBLICATIONS AVAILABLE

Publications listed in this department are obtainable by subscribers through the Editorial Department of AUTOMOTIVE INDUSTRIES. In making requests please be sure to give the NUMBER of the item concerning the publication desired, your name and address, company connection and title.

A-79—Hy-Draulic Shaper

Rockford Machine Tool Co.—A new bulletin has been released describing the company's current model 36-in. Openside Hy-Draulic Shaper. The machine has hydraulically powered table drive and tool feed. Side head is available as additional equipment.

A-80—High Speed Steels

Jessop Steel Co.—Jessop High Speed Steels are described in a new catalog. Descriptions include analyses, heat treatments and applications of five most commonly used types of high speed steels. Charts showing the hardness values after heat treatment are included.

A-81—Aluminum Castings

Aluminum Industries, Inc.—An 80-page reference manual entitled Permite Aluminum Alloy Castings, Their Production and Application, has recently been published. The attractive and well illustrated manual contains data covering all phases of the production, characteristics and uses of aluminum castings as produced by the sand, permanent mold, semi-permanent mold and die casting processes. Also included is a description of the relative advantages of the different casting methods; the alloys used to obtain hardness, tensile strength, ductility and other desired qualities; the effect of design on production costs, alloy tables and other factors important to obtaining the desired casting quality for each specific end use requirement.

A-82—Lift-Trucks

Barrett-Cravens Co.—Bulletin 4883 presents the improved line of Barrett Lift-Trucks. The two-color bulletin is illustrated and describes in detail hand lift-trucks in various capacities up to 15,000 pounds. Close-up views illustrate the advanced mechanical features of single stroke hand lift-trucks.

A-83—Carbide-tipped End Mills and Holders

Lovejoy Tool Co., Inc.—A new bulletin has been published which describes and illustrates the company's new line of carbide-tipped end mills and holders. Complete specifications and prices are included.

A-84—Jig Borers

Pratt & Whitney—A new catalog on Jig Borers describes and illustrates the various models produced by the company. The catalog is in two-colors and detailed information is given in text and pictures on the different types of borers. Additional equipment which can be purchased is listed together with several pages of specifications.

A-85—G-E Silicones

General Electric Co.—A new 12-page bulletin—CDC-102—illustrates the company's new silicone manufacturing facilities at Waterford, New York. The bulletin is a pictorial introduction to the complexities of silicone manufacture rather than a source of technical information. Included are brief descriptions of the outstanding characteristics and principal uses of G-E silicone resins, oils, greases, rubber and water repellent. A summary of the steps by which these five classes of products are made is included.

A-86—Speed Reducers

Farrel-Birmingham Co., Inc.—A new 44-page bulletin contains complete information about the company's line of speed reducers, now offered in a wider range of sizes and capacities. Simple, easy-to-understand directions are given for selecting speed reducers of the horsepower and speed required. Contents include complete descriptions of units of the single and double reduction types, specifications, horsepower rating tables, overhung load capacities, dimensions and weights.

A-87—Anti-Rust Paint

Speco, Inc.—A new bulletin describes Rustrem anti-rust paint and other

(*Turn to page 228, please*)

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If it's assembled with Form-A-Gasket it's Leak-proof!

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PERSONALS

Recent Personnel Changes and Appointments at the Plants of the Automotive and Aviation Manufacturers and Their Suppliers.

Ford Motor Co.—**Leslie V. Brown** is retiring after 37 years of service with the company.

Ford Motor Co. (International Company) The appointments of **Norbert A. Bogdan** as Vice-President and Treasurer and **A. K. Mills** as Vice-President, Public and Employe relations for the Ford International Company, have been announced.

Buick Motor Div., General Motors Corp.—**O. W. Young,** now General Manufacturing Manager, has been named Executive Asst. to the General Manager, a newly created position. **E. T. Ragsdale,** Asst. Chief Engineer, was appointed General Manufacturing Manager, succeeding Mr. Young. **Harry C. Doane** and **Richard C. Cook** have been made Asst. Chief Engineers.

Willys-Overland Motors — The appointment of **Henry C. McCaslin** as General Purchasing Agent has been announced.

Nash Motors Div., Nash-Kelvinator Corp.—**A. E. Young** has been appointed representative for fleet sales of the company. **H. E. Cardoze, Jr.,** has been made used car manager.

Federal Motor Truck Co.—**Walter L. Hayes** has been appointed Asst. General Sales Manager.

Avco Manufacturing Corp.—**Irving B. Babcock,** President, has been elected Chairman of the Board of Peninsular Grinding Wheel Co.

Bendix Aviation Corp.—The election of **George E. Stoll** and **Lawrence Hyland** as Vice-Presidents, has been announced. Mr. Stoll is General Manager of the Bendix Products Division at South Bend and Mr. Hyland, who was formerly Executive Engineer, will be in charge of Bendix Aviation research.

Sundstrand Machine Tool Co.—**Bruce F. Olson** has been elected President and General Manager, succeeding his father, the late **Hugo L. Olson. O. G. Nelson** has been elected Chairman of the Board and **Gilmore J. Landstrom** and **G. H. Ekstrom,** Directors, were elected Vice-Presidents. **Howard H. Eckstrom** was made Asst. Secretary and Treas.

The Hydraulic Press Mfg. Co.—The appointment of **J. P. Vederko** as Works Manager, has been announced.

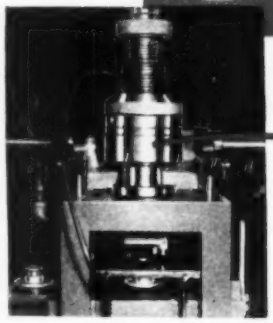
(*Turn to page* 186, *please*)

GOT ANY DIFFICULT RECESSING JOBS?

Do Them Easily with SCULLY-JONES standard

AUTOMATIC RECESSING TOOLS

(Three Types—Five Sizes)



Scully-Jones Standard Type "J" Automatic Recessing Tool with special circular form cutter, being used at Grigsby Allison Co., Inc., Arlington Heights, Ill. on a small Delta Drill press, to cut external groove on a zinc die cast clutch gear, at a rate of 300 per hour.

You can do any of these with Scully-Jones Standard Automatic Recessing Tools: retainer ring grooves; reliefs for tapping, threading, grinding, honing; chamfers; second operations on cast or molded parts, or a combination of these operations.

DOWN go recessing costs —UP goes production

RESULTS THAT PAY

You get these results with Scully-Jones Recessing Tools:

1 Make many recesses with a single Recessing Tool, by merely changing tool bit holder or circular form cutter.

2 Operate on standard production machines—no costly special machines needed.

3 Maintain close tolerances—reduce rejects.

4 Get long life—low maintenance cost—as all parts are hardened and ground, and built to take severe punishment.

5 Speed up production—cuts costs, because tool operation is automatic.

Scully-Jones Standard Type "J" Automatic Recessing Tool. Types "J" and "C" are designed to pilot in a fixture bushing.

Scully-Jones Standard Type "R"—size 2R Automatic Recessing Tool. Sizes 2R, 4R and 5R pilot in the hole or stop on the face of the work and are used in setups where it is impractical to mount a pilot bushing.

Send For Details Today—No Obligation

Write on your company letterhead for a free copy of our new 28-page Manual No. 17-2. It gives you a clear picture of the application, operation, construction and many advantages gained by using Scully Jones Automatic Recessing Tools.

Scully-Jones AND COMPANY R-2759MMS

1903 S. ROCKWELL STREET, CHICAGO 8, ILLINOIS

YOU GET LOW COST FAST ACCURATE PRODUCTION WITH OUR STANDARD AND SPECIAL TOOLS

Necrology

John Ernest Fawkes, 73, sales manager for Canada, Fitzjohn Coach Co., died on Feb. 23 in Toronto, Ont., Canada.

Andrew V. D. Willgoos, 60, chief engineer, Pratt & Whitney Aircraft Div., United Aircraft Corp., died on March 1, in West Hartford, Conn.

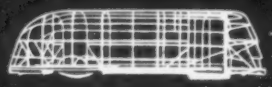
Col. George A. Green, 66, former GM vice president in charge of the GMC Truck & Coach Div., died on Feb. 22 in Miami Beach, Fla.

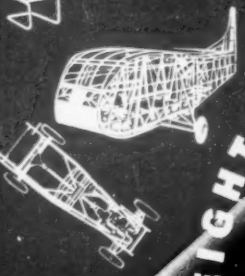
Ertie L. Foreman, 55, manager of the Los Angeles office of Whitman & Barnes, Div. of United Drill and Tool Corp., died on Feb. 9 in Los Angeles.

Eric Burkman, 56, secretary of the United States Rubber Co., died Feb. 26 in St. Thomas, Virgin Islands.

Michigan WELDED STEEL TUBING

The Modern Electric Resistance Welded Steel Tubing

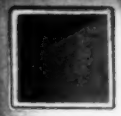




LIGHT WEIGHT · UNIFORM STRENGTH · ECONOMICAL · MACHINE-ABILITY

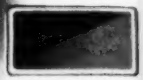
ROUND

¼" to 4" O.D. 9 BB gauge



SQUARE

¼" to 2" 20 gauge
1" to 2¾" 14, 16, 18 gauge

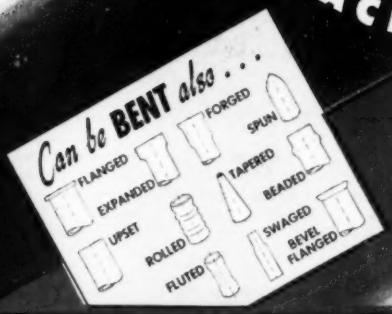


RECTANGULAR

½" to 2" 20 gauge—1" to 2¾" 14, 16, 18 gauge

Men of Vision,

The Nation's engineers and product designers are finding new applications for electric resistance welded steel tubing undreamed-of a few short years ago. MICHIGAN WELDED STEEL TUBING is being used in the manufacture of thousands of different products ranging from toys, home and office equipment, to intricate industrial fabrications. Available in round, square and rectangular shapes in a wide variety of sizes for working in your plant or prefabricated by Michigan.



Engineering advice and technical help in the selection of tubing best suited to your needs. Address your inquiries to:

Michigan STEEL TUBE PRODUCTS CO.

More Than 30 Years in the Business

9450 BUFFALO STREET • DETROIT 12, MICHIGAN

FACTORIES: DETROIT, MICHIGAN • SHELBY, OHIO

DISTRIBUTORS: Steel Sales Corp., Detroit, Chicago, St. Louis, Milwaukee, Indianapolis and Minneapolis—Miller Steel Co., Inc., Hillside, N. J.—C. L. Hyland, Dayton, Ohio—Dirks & Company, Portland, Oregon—James J. Shannon, Milton, Mass.—Service Steel Co., Los Angeles, Calif.—American Tubular & Steel Products Co., Pittsburgh, Pa.—Strong, Carlisle & Hammond Co., Cleveland, Ohio—Drummond, McCall & Co., Ltd., Toronto, Canada.

Victor Manufacturing & Gasket Co.—**George E. Victor** has been elected President, succeeding his father, **John H. Victor**, who continues as Chairman of the Board. **William F. Victor** is Executive Vice-President in charge of the recently opened plant No. 5.

Consolidated-Vultee Aircraft Corp.—**R. C. Sebold** has been made Director of Engineering.

Douglas Aircraft Co.—**John F. Martin** has been appointed Chief Pilot and **B. A. Foulde**, Asst. Chief Pilot.

Bell Aircraft Corp.—**William A. Boles** has been appointed Asst. Director of Public Relations.

Bakelite Corp.—**Harry Carlson** has been appointed Manager and **J. L. Rodgers** Asst. Manager of the newly consolidated Laminating and Adhesives Div.

Niles-Bement-Pond Co.—**Leslie McArthur**, Vice-President, has been elected a member of the Board of Directors.

The Goodyear Tire & Rubber Co.—**A. E. Polson** has been appointed technical representative of the Chemical Div.

Metals & Controls Corp.—**Rathbun Willard** has been elected Chairman of the Board and General Manager. He succeeds the late **Russell Grinnell**. **Victor D. Davignon** was elected President.

Victor G. Vaughan was elected Executive Vice-President.

Triplex Corp. of America—The appointment of **J. E. Lowe** as Sales Manager of Triplex has been announced.

Crosley Motors—**Arthur Cox** has been appointed Technical Consultant in body design.

Gould Storage Battery, Ltd.—**Norman J. McCartney** has been appointed Sales Manager for the Canada subsidiary of National Battery Co.

Utica Drop Forge & Tool Corp.—**Edward Norris** was elected Chairman of the Board and **W. V. Dougherty** was elected President.

Engineering Foundation — **Frank T. Sisco**, Director of Alloys of Iron Research, has been appointed Technical Director of the Foundation.

Stearns Magnetic Mfg. Co.—**Richard H. Koehler** has been appointed Advertising Manager.

Budd Company—**John F. Headly** has been named a Director of the Company to fill the vacancy caused by the death of **Paul Fuller.**

National Foam System, Inc.—**Hart H. Fleming** has resigned as President and Director of the company.

Cutting Tool Manufacturers' Assoc.—**Emil Gairing**, President of Gairing Tool Co., has been elected President of the Association.

American Brake Shoe Co.—**Kempton Dunn** has been elected Vice-President and **Cyrus E. Brush** elected Secretary.

Monroe Auto Equipment Co.—**A. A. Ballantyne** has been appointed Advertising Manager.

Synthane Corp.—**Herbert W. Widdop** has been promoted to Sales Manager.

National Security Resources Board—**Dr. Richard H. Rush** has been named by the Board as consultant on air transport, airports and fixed base operations.

The Sperry Corp.—**Thomas B. Doe** has resigned as President and **Thomas A. Morgan** was elected to fill the vacancy. **Harry F. Vickers** was elected Senior Vice-President.

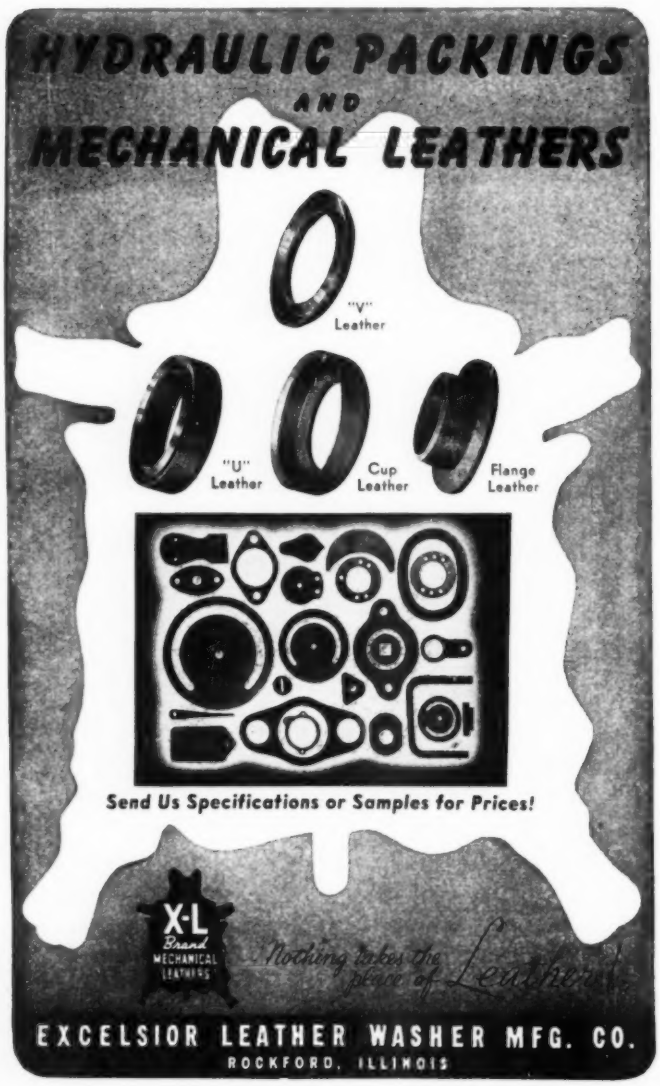
Kearney & Trecker Corp.—**Russell F. Stuart** was appointed Sales Manager of the company's Walker-Turner Division.

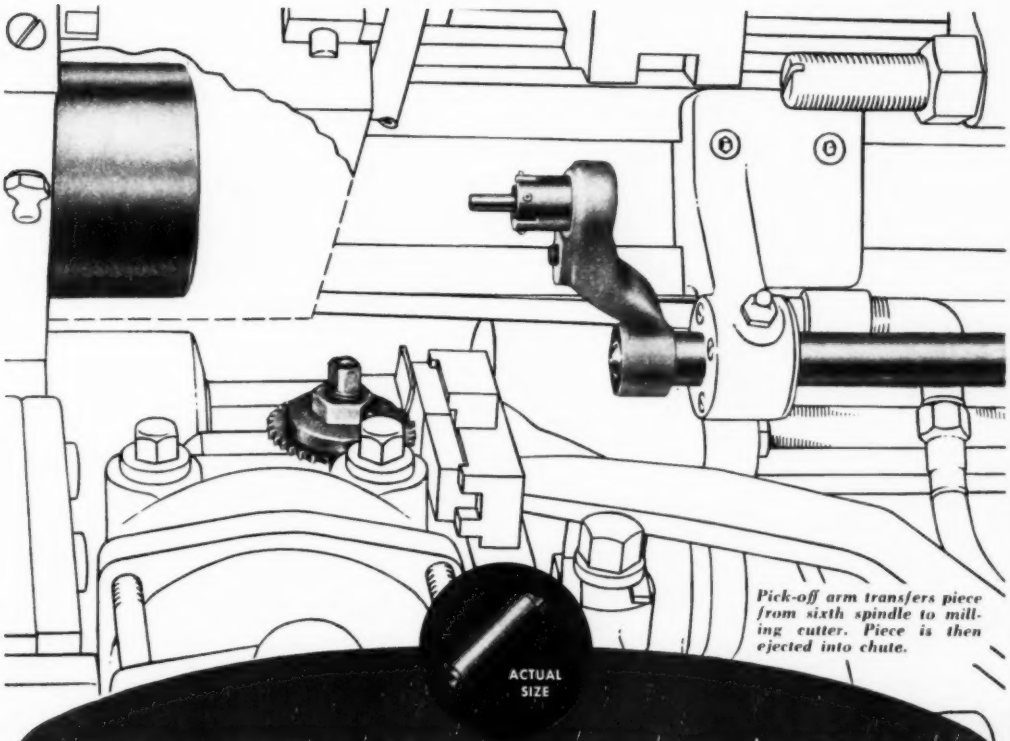
Aerojet Engineering Corp.—General Tire & Rubber Subsidiary—**A. H. Rude**, Vice-President of the company was named Executive Vice-President and Managing Director of General Tire's California operations.

Scully Jones & Co.—**Bernard K. Better** has been made Director of Research.

Weddell Tools, Inc.—**George A. Grantham** has been appointed Chief Engineer.

Allen Industries, Inc.—**Harold C. Allen**, Executive Vice-President, will be in charge of all manufacturing operations.





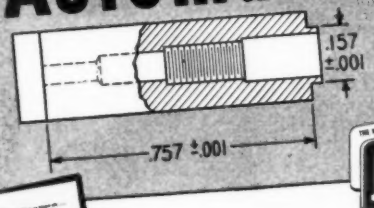
Pick-off arm transfers piece from sixth spindle to milling cutter. Piece is then ejected into chute.

ACTUAL SIZE

770 COMPLETE PIECES AN HOUR

Formed, drilled, tapped and milled on a Model 60

New Britain Automatic



Pick-off and transfer to milling attachment in sixth position makes it possible to drop off this complete piece in one operation, thereby holding down the cost of a highly competitive assembly. Because of the quantity involved, the close tolerances and the size of the piece, a second operation is out of the question.

Special machine performance on a general purpose machine with rigidity and accessibility means double protection of your machine tool investment.

Would you like to see other types of work done on this and other New Britains? Send for *"It Can Be Done"* . . . a fact packed portfolio of actual cost histories and money-making production methods.

409HD2

NEW BRITAIN

Automatics

THE NEW BRITAIN MACHINE COMPANY
NEW BRITAIN-GRIDLEY MACHINE DIVISION
NEW BRITAIN, CONNECTICUT

NEW

Production and Plant

EQUIPMENT

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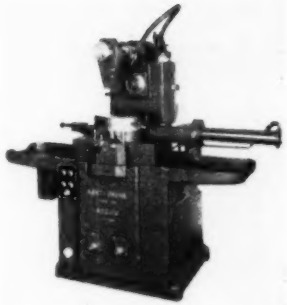
B-51—Rotary Table Milling Machine

A No. 2-20 milling machine built by Kent-Owens Machine Co., Toledo, Ohio, has been equipped with a hydraulically controlled rotary table 16 in. in diameter, which replaces the standard table. The rotary table is driven by means of a gear and rack mounted at the rear of the fixture. The rack is actuated by a hydraulic cylinder. The desired cycle can be obtained by placing the dogs in the proper position on the outside of the rotary table.

The machine has twelve spindle speeds ranging from 64 rpm to 860 rpm. Drive is simple and direct, with only two gear contacts from motor to cutter. The drive is taken from a standard foot mounted ball bearing motor, at the rear of the machine, and goes vertically through a splined drive shaft — worm and worm gear — then through pick-off gears directly to the cutter. The head is mounted on two cylindrical ground steel posts, which carry the spindle midway between them, providing rigidity with no overhang and no cocking action.



Kent-Owens milling machine No. 2-20

Intermittent high torque motor with low weight factor is adaptable to many general applications.

WHY *Lamb Electric* MOTORS are Powering America's *Finest* Products

This small sturdy motor can be readily adapted to a wide range of industrial applications.

- Good Performance
- Dependability
- Light Weight
- Compactness
- Appearance Appeal
- Value Appeal
- Low Maintenance

Universal motor used for commercial vacuum cleaners, wheel balancers, air compressors, etc.

These important qualities contribute to the popular acceptance and satisfactory performance of any product requiring a special application motor.

THE LAMB ELECTRIC COMPANY
KENT, OHIO

Lamb Electric SPECIAL APPLICATION FRACTIONAL HORSEPOWER MOTORS

B-52—Welder-Timer Assembly

For "Heliarc" spot welding, the Miller Electric Mfg. Co., Appleton, Wis., announces the new model 264-T welder-timer assembly, a "package" unit requiring only connection to input power, Argon gas, water lines and the "Heliarc" torch. The unit consists of the Miller model 271-A pneumatic timer with solenoid gas valve and flow meter assembled to the Miller model 264 A.C. arc welder.

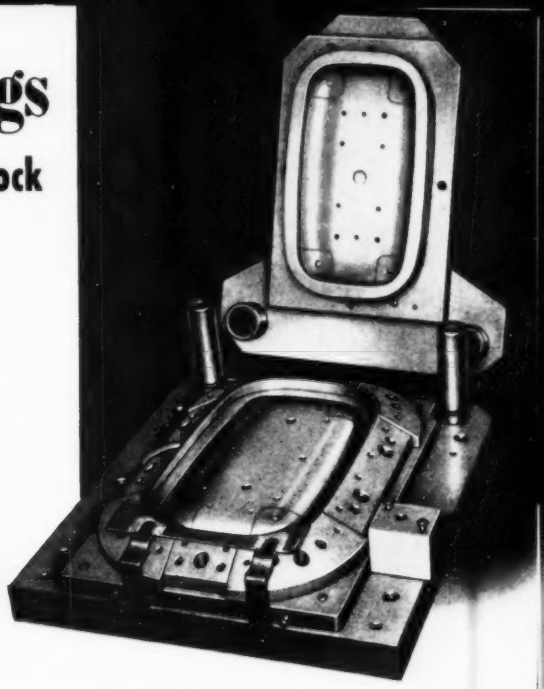
The arc welder provides continuous current control, with adjustment to the fraction of an amp by rotating the control crank on top of the machine. The high frequency unit and an extra heavy

Miller welder-timer assembly, Model 264-T.

Scratchless Stampings

Produced from 24-Gage Pre-Coated Stock

using DANLY *Precision* Die Set



Danly Precision Steel Die Set with dies used to blank and draw 14⅜" x 8" pan from 24-gage *pre-coated* lithographed cold rolled steel. Forming and curling are handled as secondary operations.

Drawing, blanking, forming and curling operations performed without marring satin-like finish

Here's an example of fine craftsmanship which is typical of the manufacturing methods employed by J. L. Clark Mfg. Co., Rockford, Ill. . . . producers of high quality lithographed steel ware.

Without marring or scratching the satin-like finish of pre-coated lithographed stock, the die illustrated blanks the center and produces an unusually smooth draw on this 24-gage steel pan. In a similar manner the edges are formed and curled in secondary operations.

Accurate punch and die relationship required

To assure accurate set-ups and precision results throughout, Danly 2-Post Precision Steel Die Sets are used, which are accurately machined top and bottom and equipped with leader pins and bushings lapped and honed to Danly precision standards. Because accurate punch and die relationship is maintained, full advantage is taken of the die makers' precision. The results are more stampings per grind, better product quality, and lower production costs.

Write for this *free* bulletin

Illustrates how you can use Danly's unusual machining service for special die sets to effect substantial savings in time and money.

save time { USE DANLY NATION-WIDE DIE SET ASSEMBLY SERVICE

Use Danly's specialized service to save time and money. Assembly plants listed below (marked with stars) stock interchangeable parts for quick assembly and delivery of any standard die set to suit your specifications.

- ★ **Chicago 50,** 2100 S. 52nd Ave.
- ★ **Cleveland 14,** 1550 E. 33rd St.
- ★ **Dayton 2,** 990 E. Monument Ave.
- ★ **Detroit 16,** 1549 Temple Ave.
- ★ **Grand Rapids,** 113 Michigan St., N.W.
- ★ **Long Island City 1,** 47-28 37th St.
- ★ **Los Angeles 54,** Ducommun Metals & Supply Co., 4890 S. Alameda
- • **Milwaukee 2,** 111 E. Wisconsin Ave.
- • **Philadelphia 44,** 18 W. Chelten Ave.
- ★ **Rochester 4,** 16 Commercial St.

DANLY

DANLY MACHINE SPECIALTIES, INC.

2100 SOUTH 52ND AVENUE, CHICAGO 50, ILLINOIS

25 YEARS OF DEPENDABLE SERVICE TO THE STAMPING INDUSTRY

PRECISION DIE SETS, STANDARD AND SPECIAL • MECHANICAL PRESSES AND PRESS EQUIPMENT

large volume BW print production

Never before has a Whiteprinter been able to offer you all the advantages found in this new Volumatic Model 93. It is the last word in large volume production of high quality direct positive BW prints. Advance models of this machine have already proved that it reduces reproduction costs . . . by faster production, less wastage, lower maintenance, simpler operation.

It has countless uses. The Volumatic, like other Bruning Whiteprinters, produces sharp, highly legible copies of engineering drawings and documents . . . anything that is printed, drawn, written or typed on a translucent medium. Its uses increase daily as more and more business and industries turn to the BW Process to eliminate the costly practice of transcribing documents, forms and records of all kinds.

It is extremely versatile. The Volumatic Model 93 produces sharp BW prints from post card size up to 42-inches wide and unlimited length. You can have light, medium or card weight prints . . . prints on tinted stocks . . . prints on film or cloth . . . prints with colored lines.

Anyone can operate it. The operation of the BW Model 93 has been simplified to the point where a girl can learn to operate it in less than an hour.

Faster operation. The new Volumatic produces BW prints up to 105 square feet a minute *at normal operating speeds.* The prints are delivered dry and ready for instant use.

Completely odorless. The BW Process is completely odorless. BW machines do not require outside ventilation or exhaust ducts. They can be installed *anywhere* without offense.

It is mobile. There are no pipe or plumbing connections to tie this machine to one spot. It can be moved easily to convenient locations.

Uniform quality control. BW Model 93 automatically and instantaneously coordinates developing and printing speeds. Changes in printing speed never result in over or under developed prints. A further safeguard to quality is Bruning's built-in constant voltage transformer which assures uniform operation of the machine although line voltages may vary from 190 to 250 volts AC.

BRUNING WHITEPRINTER
VOLUMATIC MODEL 93

Send today **for full information.** Let us send you a complete file of literature describing the new BW Model 93 and the BW mediums you can use with it. See for yourself the extreme versatility, economy and speed of this machine. There is no obligation.

Charles Bruning Company, Inc.

4724-40 West Montrose Avenue, Chicago 41, Ill.

New York • Chicago • Los Angeles • and 11 other cities

Other Bruning products you should know about — Drafting Machines Sensitized Papers & Cloth • Tracing Papers • Erasing Machines • Drafting Room Furniture • Slide Rules • Surveying Instruments • and many other products.

NEW PRODUCTION AND PLANT EQUIPMENT

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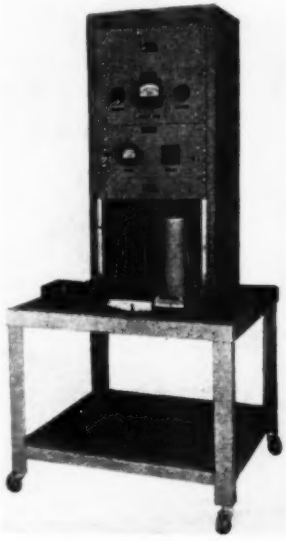
primary contactor with 110 volt operating coil are built in. The welder is provided with 220/440 volt primary connections. Power factor correction equipment to give the unit a higher power factor and reduce the KVA demand load and primary amp input is optional. The time in cycles (to be used) is selected by an adjusting control which is accessible through a door in the side of the timer case. The time in cycles (in use) is shown by an indicator disc which is geared to the adjustment control. Regular Miller "Heiliarc" welders of sufficient capacity may be made suitable for "Heliarc" spot welding by addition of available control apparatus.

B-53—Automotive Cavitometer

An automotive cavitometer manufactured by Poole Instruments, Inc., Dallas, Texas, makes comparison of resonant frequency of the vibration of air contained in a cylinder head cavity with that of a standard cavity, and measures the volume of the cavity under test to determine acceptance or rejection of the cylinder head casting. In exciting sonic vibrations in the two cavities being compared, the cavi-



Poole automotive cavitometer, single unit type.

MACHINE "GERIATRICS" is OUR BUSINESS

PERFECT Oil Seals

"GERIATRICS" . . . *treatment to avoid the effects of old age* —needs to be applied to machines. Increased life expectancy for machines is of utmost importance to industry.

Machine "Geriatrics" is our business. Perfect Oil Seals, correctly applied, will keep machinery hale and hearty far beyond the usual allotted time.

Perfect Oil Seals keep lubricant in and also keep grit, dirt, and moisture out, preventing the accelerated wear which makes many bearings old before their time.

Perfect Oil Seals have been protecting machines against the ravages of old age for more than 20 years.

With 14 standard types and 1800 sizes, there is no difficulty in meeting your requirements.

5250

Engineering counsel is available on request

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OTHER C/R PRODUCTS
SIRVIS MECHANICAL LEATHER
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CHICAGO RAWHIDE MANUFACTURING CO.

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Manufactured and distributed in Canada by Super Oil Seal Mfg. Co., Ltd., Hamilton, Ont.

NEW YORK • PHILADELPHIA • DETROIT • LOS ANGELES • CLEVELAND • BOSTON • PITTSBURGH
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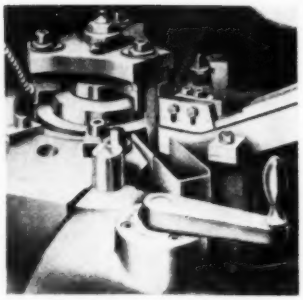
tometer determines the resonant frequencies by the rise in output of microphones adjacent to the cavities. It compares the two frequencies in a discriminator circuit. If the difference exceeds preset tolerances, a signal is lighted and the machine stops.

The cylindrical elements are sound absorbing housings for transducers which excite the vibrations. A jack clamps the head to be tested against a plate which contains cavity throats, transducers and microphones. These comparator machines may be built for four, six or eight cylinders, and are commercially available for any type cylinder head—single cylinder or multiple cylinder.

B-54—Planetary Thread Roller

Development of a planetary hyper-production thread roller with a production rate of 750 headed machine or cap screws per minute at normal hardness, or 375 per minute pre-heat treated, is announced by the Batchelder Engineering Co., Springfield, Vt. The unit, Beco Model 312, uses one externally threaded continuously rotating cylindrical inner die, and three internally threaded stationary external segment dies. Three independent automatic feeds deliver blanks to each of the outer dies. Blanks having three different types of heads can be rolled simultaneously. They drop into separate work baskets to prevent mixing. Three starter fingers introduce the three blanks to the starting ends of the outer dies. When the screws have rolled in a planetary manner about half the length of the outer dies, three succeeding blanks are introduced. After the first set of screws reaches the leave-off ends of the outer dies a third set of screws is started. Thus six screws are always being rolled. When rolling pre-heat treated stock a single lobe cam is substituted for the normal double lobe cam and blanks are started half as often.



Batchelder planetary hyper-production thread roller, Beco model 312.

Outer dies are identical. Therefore, matching the inner die with one outer die automatically takes care of the other two dies. Any inner die with correct pitch and lead can be used with any outer die of corresponding characteristics without sacrificing the set-up time. Changeover from one pitch to another is said to be accomplished within 20 minutes.

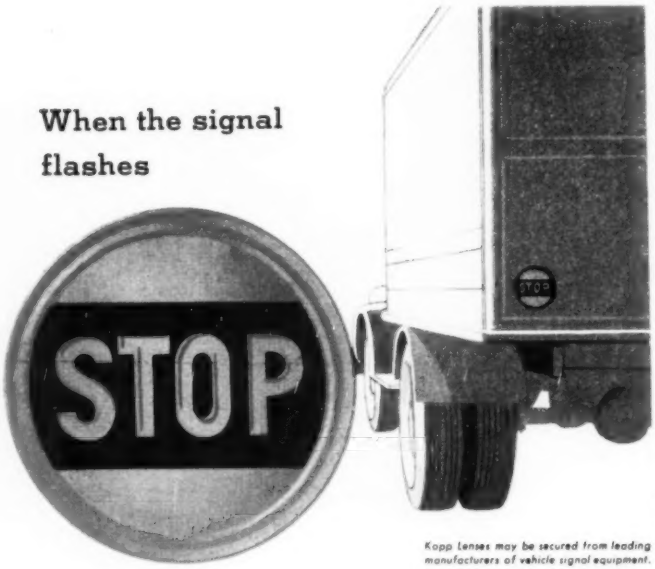
Each feed is provided with a separate ¼ hp motor and starter. Slip clutches are provided in case of jams, which if occurring, can be cleared through access doors. A 30 hp main motor drives the spindle through a Gilmer timing belt. Lubrication system is independent of the coolant system.

Beco model 312 thread roller does not employ hydraulics, being entirely mechanical except for the electrical equipment.

Its work range is No. 4-48 to and including 5/16 in.-18 headed machine or cap screws. Max. shank length is 3 in.; max. thread length, 3 in.

(*Turn to page* 194, *please*)

When the signal flashes



Kopp Lenses may be secured from leading manufacturers of vehicle signal equipment.

its meaning is clear—

if the lens is **KOPP GLASS**

ALL highway vehicles need top quality stop lights. Commercial vehicles, particularly, must have high transmission red or yellow lenses that retain their colors.

You can insure the permanent quality of your signal lenses by specifying KOPP GLASS. Widely used for railroad, marine and traffic signal service, Kopp Glass lenses are made in all desired colors. They are designed by engineers who understand your requirements both optically and mechanically, and are made by skilled workmen employing modern production equipment. They fully meet your requirements.

KOPP GLASS, INC.

SWISSVALE, PA.

KOPP GLASS

Amazing, New BLACK & DECKER 3/8" Electric IMPACT WRENCH $105.00

★ For SPEEDY running and removing of NUTS, BOLTS, CAP SCREWS, LAG SCREWS up to ⅜" thread size.

★ Makes SHORT WORK of removing FROZEN, RUSTY nuts and bolts!

★ SAVES time and labor in Metal Fabricating; Assembly Lines; Engine and Machinery Rebuilding; Garages; Truck Fleets; General Maintenance; Railroads, etc.

★ Weighs ONLY 8¼ lbs.—yet has DRIVING CAPACITY of conventional nut runner weighing almost 30 lbs.—a tremendous saving!

★ DELIVERS 2000 BLOWS per minute to hammer fasteners loose or drive them home—in a few seconds! (Free running speed: 1600 R. P. M.)

★ Operator fatigue reduced to AMAZING MINIMUM . . .

NO { jarring / twisting / fighting the wrench

★ So WELL-BALANCED, operator can control Wrench by holding it *lightly* with one hand.

★ Trigger switch for easy operating control, right or left hand. Toggle reversing switch positioned for fast, convenient thumb operation. FORWARD—REVERSE—in an INSTANT!

★ Famous full-powered B&D-built motor CAN'T BE STALLED—even when spindle is stopped dead—no danger of overload or burn-out!

IF you've ever "ridden" a heavy nut runner all day long, you know what a difference this light-weight, high-powered sturdy Impact Wrench makes in time-saving, fatigue-saving, cost-cutting! Ask your nearby Black & Decker Distributor for a demonstration. Write for free, descriptive literature to: The Black & Decker Mfg. Co., 635 Penna. Ave., Towson 4, Md.

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Black & Decker

PORTABLE ELECTRIC TOOLS

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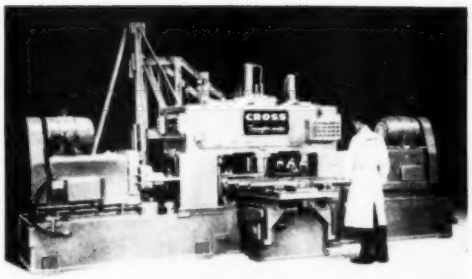
(*Continued from page 192*)

B-55—Borer and Facer For Axle Housings



Cross machine for boring and facing three types of axles without change of set-up.

A new machine tool which bores and faces three types of automotive axle housings without changing the set-up has been announced by the Cross Co., Detroit, Mich. At 100 per cent efficiency, 280 parts are processed hourly by one unskilled operator.

The new machine is a three station, transfer type unit, or Transfermatic, as Cross calls its machine tools equipped with material handling devices which automatically move parts from one operation to the next.

Three types of axles come to the machine in two different lengths. At the first station, any three of these are loaded. At station two, both ends are bored and faced with the machine automatically adjusting for length through an electric eye set up. At station three, the parts are automatically sorted by type and placed onto either one of two conveyors, depending upon subsequent processing requirements. One conveyor, which travels at right angles to the machine, receives all axles with insulator brackets attached, either long or short; the second conveyor, handling a continuation of the flow of work through the machine, receives all other axles.

This Rolling Stone Gathers Moss

And Here's Why—It Has **BUELL AIR HORNS**

"Moss," "Green Stuff," Dollar Profits . . . that's what this truck makes for Central Concrete Company of St. Louis. Gathering profits while "rolling stone" is easy *if* the truck can make fast deliveries of heavy loads through city traffic. That's where air horns help by cutting slow-downs . . . but why Buell Air Horns?

HERE'S THE REASON

Only Buell Air Horns have the "free-floating *disc*" principle of producing sound. This means you get more volume and power from a Buell than from any other horn of equal size. You make no periodic adjustments for air pressure or tone. And Buells can give a soft, polite signal with as little as three pounds of air pressure! You have *power* when you need it . . . *control* when you need it.

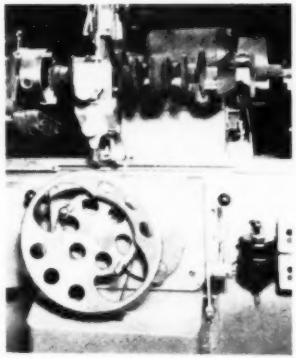
These are the reasons why manufacturers and truckers alike specify Buell Air Horns. These are the reasons why Buells Are A Better Buy—Better Buy Buells.

Write for literature and fleet discounts

Standard equipment on Autocar Trucks and GMC Buses. Approved for installation on all air-equipped trucks and buses.

BUELL MFG. CO., 929 W. 49th Place, Chicago 9, Ill.

B-56—Crankshaft Regrind Feed Mechanism



Production regrinding of crankshafts is aided by new "Electro-Matic" controls announced by the Van Norman Co., Springfield, Mass. These electrically operated feed mechanisms, available for the company's No. 400 and No. 666 crankshaft regrinders, automatically move the wheel into and away from the journal. In operation a pull on a lever brings in the wheel until it stops within 0.060 in. of the work.

(*Turn to page 197, please*)

Keen admiration for strong, beautiful bodies and a passion for vigorous competitive sports are both instantly reflected in the dances of the ancient Greeks. An almost universal form of human expression, folk dancing tended to imitate a people's activities of greatest interest—war, hunting, games, aesthetic enjoyment or religious fervor.

Materials step faster— when CLARK Fork Trucks and Tractors "call the tune"

It is apparent that *in the field of materials handling* Industry will find great opportunities for appreciable savings in costs . . . There Clark can help you . . . In studying which power-type of machine, gas-powered or electric battery-powered, will do the best possible job for your business, it is imperative to *get facts*—and in a search for facts it is equally imperative that the approach be objective and without bias . . . A Clark recommendation is known to be unbiased, because *Clark builds both types:* builds practically all their components, builds them with interchangeability of parts, builds into them all Clark's unparalleled experience. It pays well to CONSULT CLARK.

CLARK EQUIPMENT COMPANY, BUCHANAN, MICHIGAN

OTHER PLANTS: BATTLE CREEK, JACKSON, BERRIEN SPRINGS, MICHIGAN

SEE OTHER SIDE . . . . . .

MATERIAL HANDLING *News*

CLARK Builds Both

GAS-POWERED AND ELECTRIC BATTERY-POWERED FORK TRUCKS

and BOTH BUILD Profits!

This Clark team has EVERYTHING . . . A complete line ranging from 1000 to 7000 lbs. capacities.

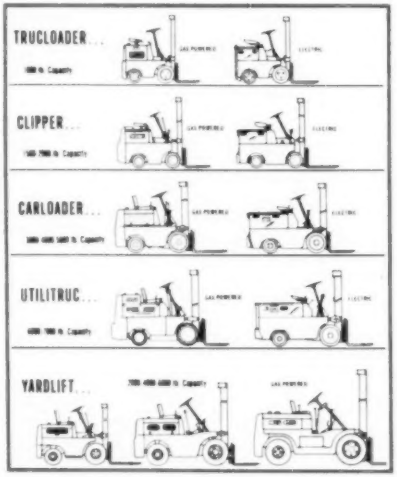
The truly vital element in any fabricated product is the idea back of it.

When Clark undertook some 30 years ago to build Materials Handling equipment, it was with the idea that it could evolve new and better handling methods and that it could produce for their implementation machines that would excel all others. That these objectives have long since been achieved and that they are maintained is demonstrated by Clark's leadership in the Materials Handling field. Furthermore, *users* endorse these products with enthusiasm and are quick to point out that they embody all the qualities that Industry has come to expect from Clark's unique experience, competence, skill and idealism.

Clark builds *both* gas-powered and electric battery-powered machines with the clear intent that each shall be the best of its kind. Insofar as possible, parts of the two power types are interchangeable for the sake of production economies which are passed along to the user in the form of lower initial cost and negligible maintenance costs. And practically all parts are manufactured in Clark's *own* plants to Clark's *own* exacting standards of quality and master workmanship.

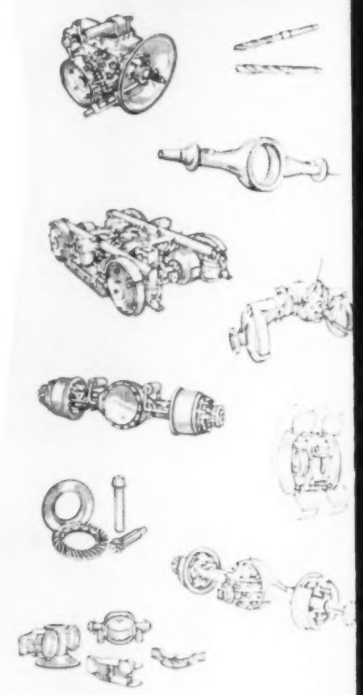
To an analysis of Materials Handling operations, Clark brings complete objectivity because it is the producer of both power types. Its sole aim is to determine which type will serve more efficiently and more economically under conditions involved.

For a complete line that has EVERYTHING, and for dispassionate and unbiased counsel concerning Materials Handling operations: CONSULT CLARK.



● The current issue of CLARK Material Handling News is one you will enjoy reading and we shall be happy to send it on your request.

Products of Clark



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DRILLS AND REAMERS • METAL SPOKE WHEELS
AXLE HOUSINGS • FRONT AND REAR AXLES
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CLARK ELECTRIC AND GAS POWERED FORK TRUCKS AND INDUSTRIAL TOWING TRACTORS

INDUSTRIAL TRUCK DIV., **CLARK EQUIPMENT COMPANY** BATTLE CREEK 69, MICH.
REPRESENTATIVES IN PRINCIPAL CITIES THROUGHOUT THE WORLD
AUTHORIZED CLARK INDUSTRIAL TRUCK PARTS AND SERVICE STATIONS IN STRATEGIC LOCATIONS

NEW PRODUCTION AND PLANT EQUIPMENT

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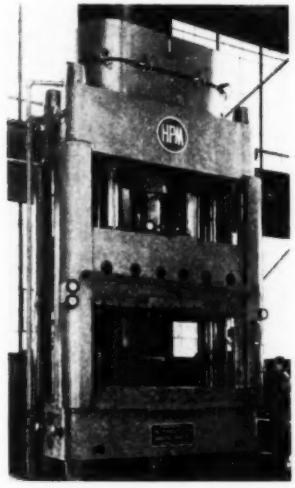
(*Continued from page* 194)

B-57—Sheet Metal Drawing Press

A giant Fastraverse sheet metal drawing press of 1000/500 ton pressure capacity has been designed by the Hydraulic Press Mfg. Co., Mt. Gilead, Ohio, to handle deep draw jobs of large dimension. It has a platen of 120 in. by 72 in. by 70 in. daylight opening and 36 in. ram travel, and is equipped with a 300 ton hydraulic die cushion with a platen of 48 in. by 52 in. and a 24 in. stroke. Bolster plate is removable.

The press is equipped with three main rams for the multiple press ram system of operation in two ranges of pressing speed. For a fast preliminary



H-P-M Fastraverse sheet metal drawing press.

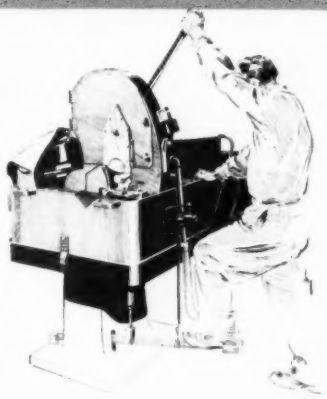
pressing at medium pressure, either the central main ram or the two outer rams can be employed with a 500 ton pressure. At a predetermined position, all three rams can be used to develop the high pressure required for final forming. For instance, where the 500 ton pressure is used, pressing speed is 58 in. per minute. After shifting over to all three rams, the pressing speed drops to 28 in. per minute.

The press is equipped with the HPM closed circuit Fastraverse system of operation, which regulates both the speed and direction of every press ram movement through control of the output of

(*Turn to page* 198, *please*)

IF YOUR PLANT DOES ABRASIVE CUTTING
CHANCES ARE YOU HELPED TO WRITE THIS ADVERTISEMENT

That's right! For chances are you checked our statements that abrasive cut-off *teamed with the right wheel* would mean savings right across the board. Let's start with . . .



THE METHOD

You found that *abrasive cutting* was appreciably faster . . . and, in the long run, that meant cost savings! And savings, too, in material for the abrasive method slices through steel, brass, copper, aluminum, etc. to size within thousandths . . . with a finished surface that requires little or no machining. Of course, a great deal depended on . .

THE WHEEL . . . and you found it paid to rely on *specialists!* Yes, Allison, the one company in the field that devotes its entire effort to the single problem of abrasive cutting . . . that has had broad experience in analyzing a wide variety of cutting problems, in making specific recommendations that have been job-proved. If you're already doing abrasive cutting, your experience is probably part of our data file . . . and helped us write this advertisement.

On the other hand, if you're *not* doing abrasive cutting in your plant . . . we suggest you investigate the cost-saving possibilities.

DO YOU CUT

STEEL
BRASS
NICKEL
ALUMINUM
GLASS
PLASTICS
TUBING
TUNGSTEN

IF SO CALL AN Allison

ABRASIVE CUTTING EXPERT

Allison ABRASIVE CUTTING WHEELS

FREE ON REQUEST

Here are the complete facts on Abrasive Cutting and Allison Wheels . . . yours for the asking. Send for your copies today.

THE ALLISON COMPANY
750 Island Brook Ave., Bridgeport, Conn.

4AL-49

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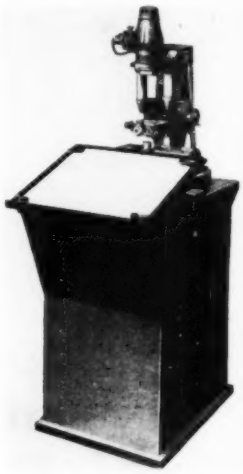
a pressure-generating radial pump. The Fastraverse action results in fast travel of the ram to the work, a slower, controlled, smooth pressing speed, and the rapid return of the ram to neutral position once the desired pressure has been reached on the work. The cycle of operation is fully automatic, controlled by electric pushbuttons. A stepless range eliminates "inching" and jerky starts and stops.

B-58—Profile Projector

An easily used profile projector, for checking and measuring at different magnifications and illuminations, is available from Hauser Machine Tool Corp., Manhasset, N. Y., exclusive U. S. factory representatives of Henri Hauser Ltd., Bienne, Switzerland. The projector permits checking and measuring of such diverse pieces as gear wheels, hobs, cutters, taps, center gages, templates, cams, etc.

The interchanging of parts for magnification or illumination purposes is entirely eliminated, all optical parts being built in. When the turret lenses



Hauser profile projector.

are twisted, the desired magnification snaps into position. The magnification slide also snaps automatically into place in perfect alignment with the turret lenses.

Luminosity is said to be strong enough to show surface areas clearly under episcopic illumination on 50 and 100 magnifications. Luminosity of the instrument also permits examination and checking of the surfaces of opaque objects.

A condenser is provided for each magnification, affording maximum light over the whole screen. Since the condensers produce a parallel beam of light on the objects, small focussing errors are of no consequence in the accuracy of measurements.

Reading accuracy on the screen is approximately 0.004-0.008 in. which, at a magnification of 100X, corresponds to an error on the object of 0.00004-0.00008 in.

B-59—Multi-Operation Special Machines

The Govro-Nelson Co., Detroit, Mich., is now designing and building complete machines for the performance of several operations in one loading, incorporating drilling, chamfering, tap-drilling and tapping. The machine illustrated is designed to drill, chamfer, tap-drill and tap the hole for the adjusting worm of a wrench in 5 seconds per wrench. The four operations are performed

VERTEX

The "VERTEX"

A "Precision" Ignition System In A Single Unit

Designed expressly to eliminate the usual difficulties encountered with battery powered ignition systems the Vertex sets new standards for reliability and performance when fitted to the high speed, high compression engines of today's vehicles.

The Vertex is a packaged unit, tailored exactly to fit the distributor drive mountings of any specified engine.

Types of Engines Sparked by Vertex

Automotive Truck Industrial
Marine Tractor Racing

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305 W. Lancaster Avenue
WAYNE, PENNA.
Phone Wayne 0341

MAGNETO

"Pedrick Rings Work Better . . . Last Longer"

That's what engineers and users are saying . . . especially in fields where conditions are tough on piston rings. Read these convincing comments!

A racing car owner writes: "Pedrick C-90 Chrome compression rings were installed in the top grooves of my Dreyer engine last summer. This engine runs at about 200°F., turns over as high as 6,300 r.p.m. In 22 races on dusty tracks, not a single ring broke and they still had good tension."

An outboard racer writes: "There is something about your rings different from any others used for racing. Your wall tension stays up longer. After a ring is installed and broken in by two or three laps wide open, the power holds up longer on Pedricks than on any other rings."

An outboard engine maker writes: "Because Pedrick rings contribute to the excellent performance of our motors, you might be interested in the rugged 136-mile Albany to New York Marathon. Our motors equipped with Pedrick rings won first *five* places in Class I, first *five* places in Class III."

A maker of lawnmower engines writes: "We operated one of these engines 3,436 hours. The original Pedrick rings are still in it and the engine is in wonderful condition. We plan to continue this endurance test to see how far it will actually go. It is a world record for air-cooled engines of this size."

Pedrick rings are able to deliver this kind of performance because they are "Heat-Shaped." This exclusive process makes possible both shape and tension that are exactly correct and long-lasting. There is no tendency to warp or distort in service. That's why users find that Pedrick rings save gas, save oil, and reduce maintenance costs. WILKENING MANUFACTURING CO., Philadelphia 42, Pa. *In Canada:* Wilkening Manufacturing Co. (Canada) Ltd., Toronto.

FOR 29 YEARS, SUPPLIER OF PISTON RINGS TO LEADING VEHICLE AND ENGINE MANUFACTURERS

Pedrick®

"HEAT-SHAPED" PISTON RINGS

NEW PRODUCTION AND PLANT EQUIPMENT

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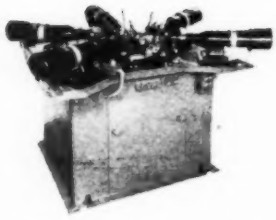
simultaneously with a set-up employing a Govro-Nelson 6-station indexing dial, interlocked electrically with the units. By dividing the tap-drilling operation into 2 stations, the total drilling time is cut in half and the problem of chip elimination is said to be greatly reduced, according to the company.



Govro-Nelson machine for simultaneous drilling, chamfering, tapping at one loading.

B-60—Three-Jaw Geared Scroll Chucks

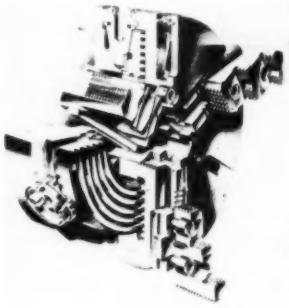
A line of extra-heavy duty three-jaw geared scroll chucks developed for high rates of metal removal is being produced in volume by the Warner & Swasey Co., Cleveland, Ohio.

Made in two styles — with serrated step-along jaws, or with American Standard tongue-and-groove jaws—the extra heavy-duty chucks are being built in 8, 10, 12, 15, 18, 21 and 24 in. sizes, and fit 6 in., 15 in. American Standard flanged spindle noses of any machine.

Chuck body is forged of high carbon steel, and the back plate cast of high-test iron, for shock-absorbancy. The scroll is machined of alloy steel, hardened to 430 Brinnel.

Bronze bushings are provided. The scroll is fitted with a renewable bronze hub bushing, and each pinion is provided with two replaceable bushings. In addition, a hardened steel, shouldered sleeve is provided at the pinion lug end, resting against the tips of the pinion teeth to take thrust and radial loads.

Precision machining design affords maximum stress at full load, so that 50 per cent greater efficiency is claimed to be obtained in pressure applied at the workpiece.



Warner & Swasey three-jaw geared scroll chuck.

Pinion and scroll gear teeth are generated on special equipment, instead of being milled as in conventional practice, to avoid uneven load concentration and metal deformation. Pinions are separately dimensioned for each chuck size, and pinion teeth have a slight "barreled" form to achieve highest bearing efficiency under load.

The serrated jaw chuck has master jaws with limited travel, major adjustments being obtained by positioning the reversible top jaws, which are adjustable in ¼ in. increments. In this type, the master jaws have dust lugs at top and bottom, positively sealing the scroll from dirt and chips.

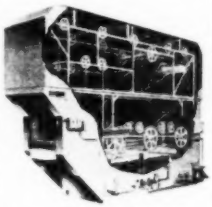
The American Standard jaw-type chuck has conventional tongue-and-groove type master jaws, without dust lugs. Spacer blocks can be provided,

You'll SAVE on EVERY Metal-Cleaning Job with DETREX Machines and Cleaning Agents

DETREX builds all sizes of hand-operated and conveyorized degreasers and washers for parts of every shape and size from needles to auto bodies—castings, forgings, tubing, wire and stampings ferrous, non-ferrous and mixed loads in any volume desired.

Detrex Hand-Operated Vapor-Slush Degreaser

For most jobs, *standard* Detrex machines provide top speed and economy, either used "as is" or with minor modifications. For the really unusual jobs, special machines are designed and built to assure the same top efficiency.



Three-Dip Detrex Degreaser with Cross-Rod Conveyor

DETREX SPECIALIZED CLEANING AGENTS Include:

Conveyorized Detrex Multi-Stage Washer with Three Spray Zones and Blowoff

DEGREASING SOLVENTS for

★ *Both ferrous and non-ferrous metals, and adverse operating conditions* PERM-A-CLOR, the most highly stabilized of all trichlorethylene solvents.

★ *Average applications*—TRIAD, identical to Perm-A-Clor in cleaning power.

ALKALI and EMULSION CLEANERS for

★ *Aluminum* parts and *painted surfaces.*

★ *Brass, aluminum* and *white metal* parts.

★ *Heavy-duty* cleaning of *iron, steel* and their alloys.

★ Cleaning and neutralizing prior to *vitreous enameling.*

★ *Electrolytic cleaning* especially for plating.

★ *Heavy-duty stripping* of pigmented oil paints, synthetics, and baked enamels.

★ *Removing all kinds of oils and insoluble dirt,* without attack on surface or coating.

Detrex machines and cleaning agents, *fitted to the job,* assure fast and thorough cleaning at lowest cost. That's why it pays to see your Detrex man on *every* metal-cleaning application.

DETREX Corporation
DETROIT 32, MICHIGAN
DEGREASING MACHINES AND SAFETY SOLVENTS • METAL PARTS WASHERS • ALKALI AND EMULSION CLEANERS AND STRIPPERS • PROCESSING EQUIPMENT • SPRAY BOOTH COMPOUNDS

The "Place" type head is formed with a cup-like recess in its upper face and a circular recess in its under face adjacent to the shank. Between the radii of these recesses is formed a diaphragm (x) which acts as a spring element when the head is wrenched tightly against a rigid base.

U. S. Patent No. 1966044

DIAPHRAGM HEAD MAKES PLACE BOLT

self-locking against VIBRATION

Critical problems of fatigue and involuntary loosening on automotive, aircraft, farm equipment, and other products have been effectively met by *self-locking* Place Bolts.

The unique "diaphragm" head design (see illustrations) produces an axial spring tension when the bolt is tightened, giving it extraordinarily high vibration resistance. Place Bolts may be used with nuts or in tapped holes, but should be used only where it is possible to tighten against a rigid seat.

Made of alloy steel, heat-treated to high physical properties, Place Bolts can be furnished in a wide range of sizes and may be developed for special applications. Typical examples include connecting rod bolts, main bearing cap screws, flywheel bolts and piston pin lock screws.

Write for details and prices.

"National" Products Include
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National
HEADED AND THREADED
PRODUCTS

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Cleveland 4, Ohio

Pacific Coast: National Screw & Mfg. Co. of Cal.
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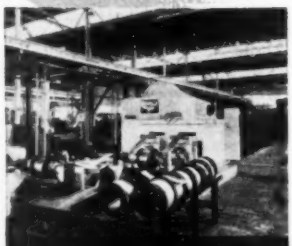
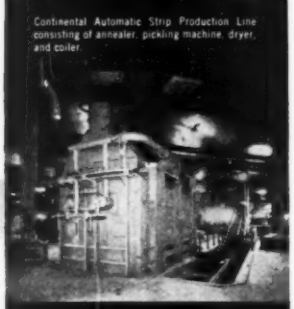
Production Lines and Special Automatic Machines *by* CONTINENTAL

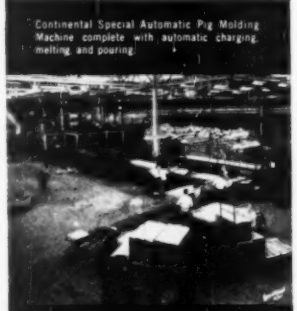
roll back your costs..



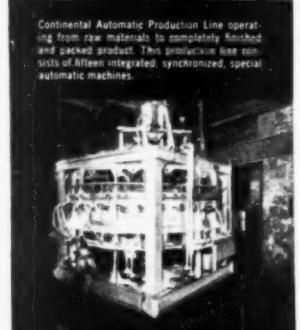
Continental Automatic Strip Production Line consisting of annealer, pickling machine, dryer, and coiler.



Continental Special Automatic Pig Molding Machine complete with automatic charging, melting, and pouring.



Continental Automatic Production Line operating from raw materials to completely finished and packed product. This production line consists of fifteen integrated, synchronized, special automatic machines.



Continental Special Automatic Glazing Machine complete with automatic press synchronizer and fire polisher.

Manual operations have to be eliminated to really roll back costs. With CONTINENTAL Special Automatic Machines and Integrated Production Lines the labor savings alone reduce costs to a fraction. Besides a better and more uniform product, production is continuous, and waste and scrap are negligible.

CONTINENTAL'S over-all job delivers to you the complete, unitized special machine or production line installed and producing, with results guaranteed.

With over 25 years' experience extending into practically every industry, our continuous research produces many original designs and improved procedures. All of this data is available for preliminary planning. You are invited to share CONTINENTAL'S engineering "round table" to discuss any special automatic machine or production line you have in prospect. There is no obligation.

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Every Plant Needs CONTINENTAL. Write for This New Booklet No. 127. See How CONTINENTAL Can Help You.

FURNACES
PRODUCTION LINES
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SPECIAL MACHINES
COMPLETE PLANTS

MANUFACTURERS—ENGINEERS—CONTRACTORS FOR OVER A QUARTER OF A CENTURY

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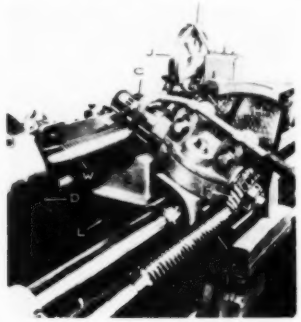
however, so that serrated jaws can be used interchangeably in the same chuck body.

B-61—Automatic Thread Generator

An automatic thread generating machine, particularly for production of feed screws, worms, etc., is being introduced by the George Scherr Co., New York, N. Y.

The idea of the generating principle as applied in this machine, dates back to 1896 when the inventor Jean Cornelis of Liege, Belgium, produced a novel machine for cutting so-called hour glass (globoid) worms.

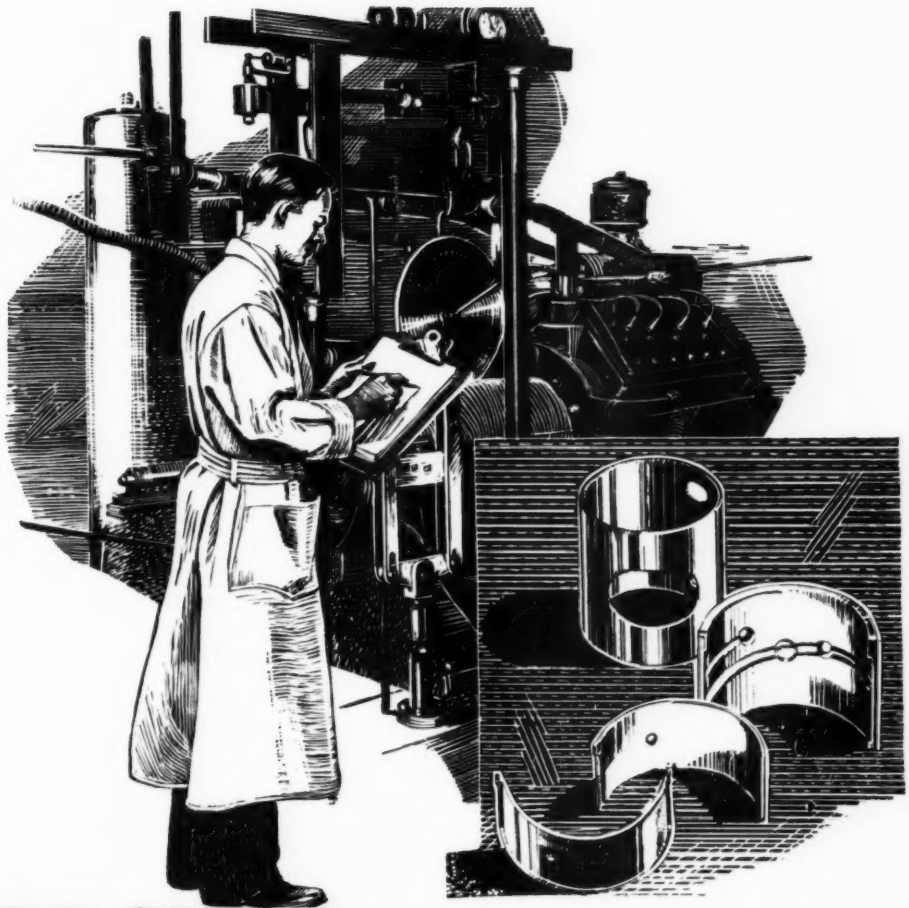
This type of curved worm contacts the worm gear over its full length, instead of engaging only at the mid-section, as



Automatic thread generating machine introduced by the George Scherr Co.

is the case with cylindrical worms. Cornelis used a circular cutter similar to the wormwheel for cutting the thread of the globoid worm. Observing the action of this cutter, he thought that if the cutter were being fed longitudinally along the bar, he would also be able to cut cylindrical worms and screws of any length or shape, also single or multiple threads in one pass, thus eliminating indexing for multiple start threads.

In operating the thread generator the bar or wormblank to be threaded is held on one end in a Universal self-centering chuck or a special holding fixture. The work is supported in a bushing directly below the cutter. The generating cutter, having the helix angle of the work, is driven directly by a bronze worm wheel meshing with the hardened and ground master lead screw 30 deg. pressure angle. This design of driving the cutter directly from the wormwheel eliminates errors otherwise introducible by change



BE SURE of Bearing Performance

JOHNSON BRONZE determines in advance your requirements for a sleeve bearing . . . then designs and produces it to meet these specific conditions.

A bearing leads a tough life. It must be correct in every detail or it will not operate efficiently. The whole mechanism in which it is installed ceases to operate when a bearing fails. Therefore, Johnson Bronze makes sure that each bearing will deliver top performance for the longest period of time at the lowest possible cost. An example . . . automotive bearings. In addition to tests for determining physical and chemical characteristics, Johnson technicians simulate actual operating conditions with dynamometer tests. They go even further. Grueling road tests are run under severest operating conditions. From the facts obtained it is natural that long life and economy are built into Johnson Sleeve Bearings.

You, too, can know in advance that a Johnson Bearing will not fail. Similar technical research is available for your bearing requirements. Why be satisfied with less? Write today for complete details.

JOHNSON BRONZE CO.

625 S. Mill St., New Castle, Pa.

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gears, backlash of couplings, keys, etc. Also because both the work and the master screw are equally supported in bushings, any bending or sagging, due to their own weight, are avoided. Thus, the accuracy of the master lead screw is directly reproduced on to the lead screw to be cut. Both the master lead screw and work are free to expand in lateral direction.

The cutters are of high speed steel. The profile is ground by a special Cornelis process, which reproduces the correct shape of the thread and retains the same pressure angle unchanged on flanks, after successive sharpening of the cutter. The cutters are sharpened on their face only, which may be done on any standard tool grinder.

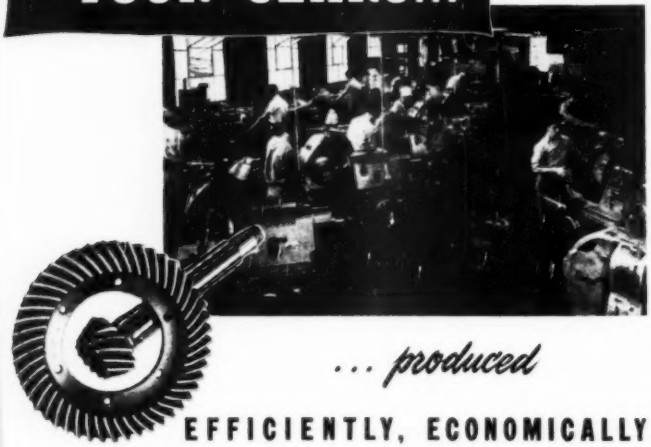
The bed is of heavy, box type construction. The heavy saddle is fitted to the bed by scraping and is guided by two cylindrical guide bars. Two lead screws feed the carriage longitudinally. Control of depth of cut is by hand wheel graduated on its rim in 1/1000.

Attachments for milling keyways in long shafts can be furnished to order. Lead screw keyways may be cut before the threading operation. The thread generating cutter raises no burr on the edges of the keyway. Machine action is fully automatic after the set-up is completed.

There are two types of machine to select from. One is a plain, heavy duty machine with saddle and outboard support of cutter spindle; the other is a universal machine for general production of lead screws and threads. In each type, four different lengths of bed are available, 18 in., 37 in., 77 in. and 116 in. Longer screws can be cut by resetting the work which can be accurately performed with necessary care.

The machine can also be used for generating many different formed parts.

YOUR GEARS...



... produced

EFFICIENTLY, ECONOMICALLY

● At Fairfield, YOUR GEARS are in the hands of specialists equipped with every modern facility for producing the gears EFFICIENTLY, ECONOMICALLY. We believe it will pay you, as it has others, to become acquainted with the service Fairfield is rendering to manufacturers in virtually every branch of the machinery building industry. Ask for a copy of interesting, illustrated descriptive brochure.

FINE GEARS Made to Order

SPUR. Straight, helical, and internal. Sizes from 16 pitch, 1½" dia. (approx.), to 1½ pitch, 36" dia. (approx.).

HERRINGBONE. Sizes from 1½" to 15".

SPIRAL BEVEL. Sizes from 16 pitch, 1½" dia., (approx.), to 1½ pitch, 28" dia. (approx.).

STRAIGHT BEVEL. Sizes from 16 pitch, 1½" dia. (approx.), to 1½ pitch, 28" dia. (approx.).

HYPOID. Sizes from 1½" to 28" dia. (approx.).

ZEROL. Sizes from 16 pitch, 1½" dia. (approx.), to 1½ pitch, 21" dia.

WORMS AND WORM GEARS. Worms to 7" dia. Worm gears to 36" dia.

SPLINED SHAFTS. Lengths to 45". Diameters from 1" to 6".

DIFFERENTIALS. Complete units.

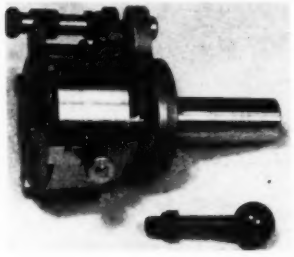
FAIRFIELD for FINE GEARS

FAIRFIELD MANUFACTURING COMPANY
319 S. Earl Ave.,
Lafayette, Indiana

B-62—Aligning Shank Die Head

A new aligning shank DS convertible self-opening die head for solving machine misalignment problems is an addition to the line of the Geometric Tool Co., New Haven, Conn. The aligning shank corrects slight amount of wear in a machine not justifying an expensive rebuild job, the company states. The new shank maintains die head rigidity and initial machine capacity by reason of a reduced overhang distance from the turret when installed.

Alignment is made by loosening two square head screws at the rear of the head, allowing the head to float freely. A true running work blank is then threaded by slowly feeding the head the full length of the thread to be cut. The machine is then stopped and the two square head screws are tightened. The head is then in proper alignment with the work spindle. Aligning plugs are available for centralizing these heads.



Geometric aligning shank DS convertible die head.

The convertible DS die heads are available up to and including ¾ in size.

(*Turn to page* 208, *please*)

POWER

Exide BATTERIES

bring *EXTRA* power to Diesel engine cranking

When Exide Batteries do the cranking, Diesel engines start. They're proving that daily on thousands of off-the-highway operations, in all parts of the world, and under all service conditions.

Exide Batteries surpass in this toughest of all cranking tasks because they're built specifically for the job. They are a development of an engineering and manufacturing skill gained from long experience in building batteries for hundreds of applications. You can always count on Exide Diesel Cranking Batteries for dependability, long life and low cost maintenance.

1888 . . . DEPENDABLE BATTERIES FOR 61 YEARS . . . 1949

THE ELECTRIC STORAGE BATTERY COMPANY, Philadelphia 32

Exide Batteries of Canada, Limited, Toronto

SUN "JOB PROVED" PRODUCTS CUT COSTS,

Sun products have been "Job Proved" in the lubrication of almost every type of mining, manufacturing, power, and transportation equipment . . . in refrigeration and air-conditioning . . . in metal cutting, tempering, and quenching . . . in the processing of textile fibers, leather, natural and synthetic rubbers . . . in the impregnation of electrical, electronic, and packaging materials of many kinds.

To help you solve your production problems, Sun Oil Company offers a wide selection of "Job Proved" petroleum products, plus the experience of Sun Engineers. Their know-how and detailed product information are yours for the asking. Call your local Sun office, or write Dept. AA-3.

SUN OIL COMPANY • PHILADELPHIA 3, PA.

In Canada: Sun Oil Company, Ltd., Toronto and Montreal

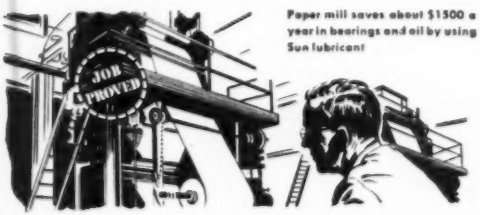
INDUSTRIAL OILS

SUNVIS 900 OILS—High-viscosity-index, paraffinic-type oils—of uniform O F pour point—fortified against rust, corrosion, oxidation, and sludge. The finest available lubricant for turbines, hydraulic systems, and similar applications.

SUNVIS HD 700 OILS—High-viscosity-index oils containing additives which minimize oxidation and give detergency. Ideal lubricants for internal combustion engines subjected to continuous heavy loads under the most adverse conditions.

SUNVIS OILS—Solvent-refined paraffinic-type oils of uniform high viscosity index, low pour point, and low carbon content. Especially suitable for application to long-time use in all types of industrial reservoirs and circulating systems.

DYNAVIS OILS—Low-pour-point, high-viscosity-index, inhibited oils, containing an additive which helps prevent formation of harmful corrosive and sludge-forming acids. Well suited for engines fitted with alloy bearings and operated at high temperatures.



Paper mill saves about $1500 a year in bearings and oil by using Sun lubricant

SOLNUS OILS—Well-refined straight mineral oils. Stand up under hard use for long periods of time. Recommended for use in machine tools, air compressors, certain types of diesels, etc.

CIRCO OILS—Used for general lubrication of industrial machinery when straight mineral oils are required.

SUNTAC OILS—100%-petroleum products which have been compounded to increase their adhesiveness. Recommended for general lubrication of all machines subjected to sudden shocks and load reversals. Cling to the parts to be lubricated.

STEAM CYLINDER OILS—High flash and fire point lubricants for either saturated or superheated steam conditions and for worm-gear speed-reduction units.

SUN CAR JOURNAL OILS—Dark oils meeting A.A.R. Specifications. For use in waste-packed bearings of railroad equipment.

SUN DELAWARE OILS—Dark oils for general lubrication on older types of industrial machinery.

SUNOCO WAY LUBRICANT—For use on tableways. Eliminates chatter and scoring . . . resists corrosion. Has good metal-wetting and adhesive properties, ample viscosity, and E. P. qualities.

SUN MARINE ENGINE OILS—Compounded with special emulsifying agents in order to provide adhesion to, and lubrication of, working parts in the presence of water. For the lubrication of bearings, eccentrics, crossheads, and various other parts of steam engines.

ROCK DRILL OIL—High-film-strength adhesive oil. For use in jackhammers, stopers, drifters, and similar equipment.

INDUSTRIAL GREASES

SUN CUP GREASES—Water resistant. For grease-cup and grease-gun application when service is normal.

SUN GUN GREASES—Smooth greases made with medium-viscosity oil. Stable under pressure in power and booster guns.

ADHESIVE PRESSURE GREASES—Won't drip or splash. Excellent lubricants for open-gear applications.

SUN DARK PRESSURE-SYSTEM GREASES—For power-driven central grease lubricating systems in heavy industries. Also used as a "medium cup grease."

SUN MINE CAR GREASES—Available in several grades. Suitable for both antifriction bearings and plain-bearing cavity-type wheels.

SUN MINING MACHINE LUBRICANT—Semifluid. For use where a light but adhesive grease is required. Resists separation and decomposition.

Chemical plant saves about $8000 per year by adopting Sun Pressure Grease

SUN ROLLER BEARING GREASES—For use on electric motors and generators and high-temperature machinery equipped with ball or roller bearings.

SUN GEAR COMPOUNDS—Black adhesive open-gear compounds and

"JOB PROVED" IN EVERY INDUSTRY

SUN PETROLEUM

SPEED PRODUCTION, IMPROVE QUALITY

wire-cable greases. Recommended for power presses, mining machinery, worn reduction mills, crushers, pump gears, etc.

SUNOCO TRACTOR ROLLER COMPOUND—For crawler-type tractors. Provides good lubrication with exceptional sealing qualities.

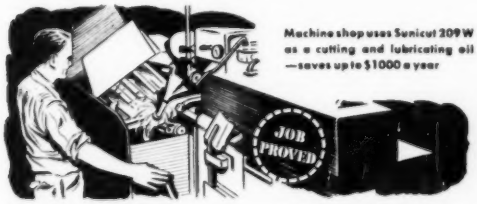
METALWORKING OILS

SUNICUT—Straight (non-emulsifiable) transparent cutting oils. Recommended for automatic screw machines and heavy-duty machining operations. Permit high speed production with excellent finishes, long tool life.

SUNOCO EMULSIFYING CUTTING OIL—A self-emulsifying oil which produces a stable white emulsion. Efficient and economical cooling and lubricating medium for turning, milling, drilling, and other metalworking operations on both ferrous and nonferrous metals. It is also an excellent grinding coolant.

SUN QUENCHING OILS—Specially refined oils designed to aid development of maximum physical properties in a wide variety of steels.

SUN TEMPERING OILS—Specially refined oils for tempering steel. Because of their low carbon content and stability under heat, these oils have an unusually long service life.



Machine shop uses Sunicut 209 W as a cutting and lubricating oil —saves up to $1000 a year

SUN ROLLING OILS—Straight and emulsifying oils which will permit maximum production in rolling steel, aluminum, brass, and copper.

SUN ANTI-RUST COMPOUNDS—Petroleum-base oils with chemical additives designed to prevent the rusting and corrosion of steel.

REFRIGERATION OILS

SUNISO REFRIGERATION OILS—Have extremely low pour points, extremely low wax-separating characteristics, a high degree of stability and long life. Initially neutral and resistant to formation of detrimental acids under service conditions. Suniso Oils are high quality oils suitable for both high- and low-temperature operations. The most widely used oils in refrigeration and air-conditioning.

Sports arena steps up compressor efficiency 15% by switching to Suniso Oil

TEXTILE-PROCESSING OILS

SUNOTEX TEXTILE OILS—Designed to impart certain additional properties to various forms of fibers during their processing from the fiber state into a manufactured product. All Sunotex textile oils are emulsifiable in water. Highest rating in fadometer tests.

SUN COTTON CONDITIONING OILS—Pale mineral oils which condition the cotton. They prevent waste by cutting down excessive amounts of "fly" (fine air-borne lint particles).

Worsted mill obtains easier scouring, better quality, larger yield with Sunotex WO-220

SUN ASBESTOS FIBER CONDITIONING OIL—Used for spraying on the asbestos during processing. Fibers are kept from being damaged or broken down, and harmful dust is minimized when this product is used.

SUN CORDAGE OILS—Generally used alone, but are adaptable to various formulas used by cordage manufacturers. Selected products, highly compatible with additives.

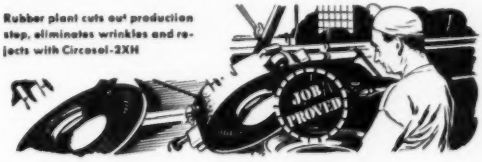
RUBBER-PROCESSING AIDS

CIRCOSOL-2XH—An elasticator and processing aid for natural rubber and especially for GR-S. Outstanding for sponge rubber.

CIRCO LIGHT PROCESS AID—A processing agent and excellent softener for natural rubber, natural rubber reclaims, and neoprene synthetic rubber. Used for GR-S to some extent.

SUNDEX-54—An inexpensive product suitable for processing GR-S and blends of GR-S and natural rubber. An established processing aid for rubber footwear stocks and semihard rubbers.

Rubber plant cuts out production step, eliminates wrinkles and rejects with Circosol-2XH



CIRCOMAR-5AA—A black-colored product for processing natural and GR-S rubber used in tire-making. Also used in reclaiming natural-rubber scrap. Replaces asphalt fluxes. Free-flowing at room temperature.

WAXES

Sun's new wax plant will be completed in 1949. Its many refining innovations and extreme flexibility will permit new types of waxes to be manufactured in large quantities—a procedure heretofore impracticable. A wide range of fully refined paraffin and microcrystalline waxes will be "tailor-made" to meet the requirements of virtually all major industrial applications. Pilot plant samples of several grades are now available.

MISCELLANEOUS INDUSTRIAL PRODUCTS

SUN SOLVENTS—Sun Spirits for the thinning of paints, varnishes, and enamels, and for metal-cleaning . . . a pure, water-white petroleum solvent free of corrosive sulphur. Other Sun solvents with special properties are available for the chemical industry.

SUN LEATHER OILS—Mineral-base leather oils. Used for obtaining the desired tensile strength, proper temper, and controlled moisture content Maintain a light even color . . . mix well . . . distribute evenly.

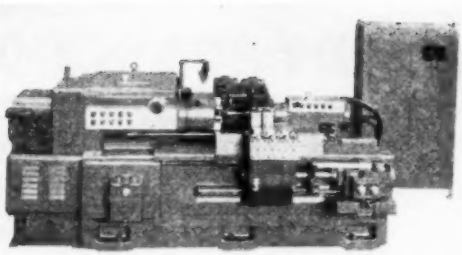
"JOB PROVED" IN EVERY INDUSTRY

PRODUCTS SUNOCO

NEW PRODUCTION AND PLANT EQUIPMENT

For additional information please use coupon on page 182

(*Continued from page* 204)



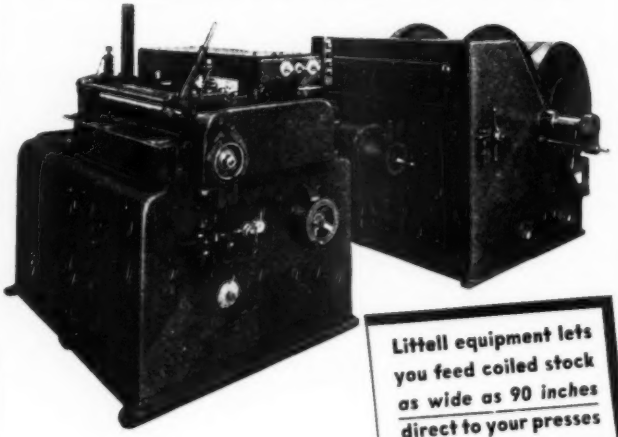
Morey automatic lathe tooled for turning a front automobile axle (knuckle joint)

B-63—Automatic Lathe

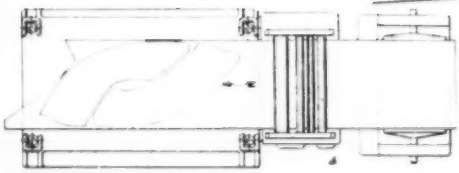
A new development for high production turning is offered by the Morey Machinery Co., Astoria, N. Y., in a hydraulically operated electrically controlled automatic lathe. Available in two types, Model DB is for between center work; Model CD for chucking and fixture work.

The machine handles a large variety of turnings such as rear end bevel pinion gear shafts, gearbox parts, and shafts up to 36 in. from the smallest diameters to 4 in. O.D.

How to save in blanking and forming—



Littell equipment lets you feed coiled stock as wide as 90 inches direct to your presses



Left: see how fender blanks are nested for economy with Littell equipment.

GAIN tremendous savings. *Use coiled stock in extra-wide sizes.* With wide stock you nest irregular, awkwardly shaped blanks—reducing scrap losses. For example: auto makers save 12c to 15c per vehicle on stock alone, nesting fender blanks in this way. (See diagram.) Production rates per man-hour go up too.

Modernize your press room with Littell equipment Littell has proved its leadership where it counts—out on the floor of actual factory press rooms. Today—write to Littell for complete details. REQUEST BULLETINS.

Top: No. 6-38 Littell rack and pinion Feeding Machine, with No. C-100 Coil Cradle. Automatically straightens and feeds stock at desired feed length (0" to 74") and interval (7 to 28 lengths per minute). Run-in motor makes it easy to start new coils. Take coils up to 1/16" x 36". Cradle capacity is 10,000 pounds.

Also available: Hydraulic-Drive Feeding and Straightening machines, taking coils up to 90" wide. Inch forward and reverse speeds (for easy threading of new coils) as well as automatic forward cycling from 30" to 160" feeding length. Cradles up to 90" and 30,000 lb.

F. J. LITTELL MACHINE CO.

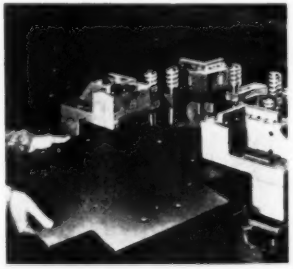
4155 Ravenswood Ave. Chicago 13, Ill.

B-64—Notching Units

New heavy-duty type NJ notching units brought out by Wales-Strippit Corp., North Tonowanda, N. Y., for use in stamping presses and press brakes, provide a maximum 5 in. by 5 in. 90 deg corner notch in metal up to ¼ in. thick mild steel. With these notching units the press ram has only one function—to depress the punch; the punch is not attached to the press ram. All parts of the notching units—punches, dies, and punch lifter springs—are built into a self-contained holder to keep punches and dies in permanent alignment. Each unit is mounted independently to provide quick setups according to varying patterns.

Complete setups, ready to operate, may be made outside the press on T-slotted plates or templates, which allows setups to be moved onto the press bed and to start production with the first downstroke of the press ram. Templates not in active use may be stored and the notching units kept in continuous operation on other templates.

These type NJ notching units have the same shut height as type CJ hole punching units and may be used in combination setups to punch and notch up to ¼ in. thick mild steel in the same operation.



Wales type NJ heavy-duty notching units and type CJ hole punching units set up on templates in stamping press.

FASTER ... EASIER *and* TIGHTER!

"LATCHING" TYPE
Self-retaining at mid-panel locations.

SEND FOR THIS FREE SAMPLE KIT!

Check the operating and performance advantages of Shakeproof "SPEED NUTS" right in your own assembly procedure.

"J" TYPE
Self-retaining at panel-edge locations.

FASTENING HEADQUARTERS
TRADE MARK

Shakeproof "SPEED NUTS" outperform ordinary nuts in all three basic elements of fastener performance... speed of assembly, ease of tightening and resistance to vibration loosening. They tighten quickly and provide a positive, vibration resistant thread lock without extreme torque.

And, when the "SPEED NUT" principle is incorporated in specially designed fastening devices, performance advantages—and savings—multiply! The two Shakeproof "SPEED NUT" Types illustrated here, specially designed to simplify assembly at hard-to-reach fastening points, typify the advantages of "engineered" application of the "SPEED NUT" principle. Test Shakeproof "SPEED NUTS" in your particular application . . . see how you can save! Send for your *free* testing sample kit today!

SHAKEPROOF, inc., Division of Illinois Tool Works, 2501 North Keeler Avenue, Chicago 39, Illinois. In Canada: Canada Illinois Tools, Ltd., Toronto, Ontario.

Shakeproof
SPEED NUTS*

BINKS BINKS BINKS BINKS BINKS BINKS BINKS
BINKS BINKS BINKS BINKS BINKS BINKS BINKS

Binks new continuous flow

UNDERBODY COATING PUMP

NO. UC-240

ADVANTAGES

...This unit stretches normal profits into BIG ones on underbody and sound-deadening coatings.
...It fits directly on a standard 55-gallon open top drum. No time is lost, no material wasted, transferring it to a material tank.
...Just turn on the air and spray. No time is spent in preliminary preparation of materials or equipment.
...You can spray straight through, without interruption, until the job is finished or the drum is pumped dry.
...It pumps light or heavy materials with a steady, pulseless flow.
...The pump is easily cleaned. High pressure material does not come into contact with packing.

OPERATION

...Air operated dual pistons deliver the material directly to the spray gun at four times the applied pressure, through ¾-inch material hose, in any regulated quantity up to 5½ gallons per hour.
...Binks continuous flow underbody coating pump is a light weight, self-contained unit, with a cover that seals and protects the contents of the drum.

EQUIPMENT

...Binks continuous flow underbody coating pump is supplied with a standard two-regulator control, and pressure gauges.
...The pump is available separately or as part of a complete spraying outfit, as illustrated, with 20-feet of air and material hose and Binks 7E1 heavy duty spray gun for handling heavy materials.

FOR FURTHER INFORMATION

...See your local automotive jobber or write directly to us at the address given below.

"Competition exists only for those unwilling to abandon old ideas for proven better ones."

President

Binks MANUFACTURING COMPANY

3120-30 Carroll Ave., Chicago 12, Ill.

NEW YORK DETROIT LOS ANGELES ATLANTA BOSTON CLEVELAND DALLAS MILWAUKEE NASHVILLE PHILADELPHIA PITTSBURGH ST LOUIS SAN FRANCISCO SEATTLE WINDSOR, ONTARIO, CANADA

Send now for free copy of our new Catalog Data Book. Request your copy on your company letterhead.

NEW ★ PRODUCTS

For additional information please use coupon on page 182

C-58—Oil-Hydraulic Machinists Vise

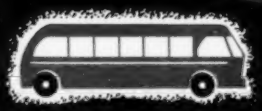
An oil-hydraulic machinist's vise, swivel-type, foot-operated, with 3½ in. jaw width and 6 in. jaw opening is

Columbian oil-hydraulic machinist's vise.

offered by the Columbian Vise and Mfg. Co., Cleveland, Ohio, providing a pressure up to 6000 lb per sq in.

For bench production work involving hand tool operations or assembly, an adjustable production stop can be set at any point within the full range of the jaw opening to hold a series of pieces of the same size and shape. The production stop is adjusted with the first work piece held between the jaws of the vise and then backed off to give enough clearance for working. With this stop, the operator can grip and hold normal work with one power pedal stroke and can obtain maximum pressure with not more than two strokes.

The vise is made with two foot control pedals—one power, the other release. The power pedal provides a slow short movement of the front jaw, only eight strokes being required for closing from full open position. This hydraulic pump single power pedal op-



1 5 9 1 7
2 5 9 1 7
3 5 9 1 7
4 4 5 9 1 7
5 5 9 1 7
6 5 9 1 7

thousands of

maintenance-free bearing miles

on SKF ball and roller bearings

Truck and bus manufacturers rely on the performance of SKF Bearings. They know that these rugged units stand up under the severest operation without maintenance attention.

The reason: SKF Bearings keep important moving parts in correct alignment, have high capacity for heavy radial and thrust loads . . . which add up to economical, long bearing life.

SKF Single Row Deep Groove Ball Bearings
SKF Cylindrical Roller Bearings
SKF Propeller Shaft Boxes form a complete line of quality-manufactured, expertly designed units that make the tough jobs easy. Our engineering staff can help you with your bearing applications. SKF Industries, Inc., Philadelphia 32, Pa. 6566

Automotive Bearings engineered by **SKF**

NEW PRODUCTS

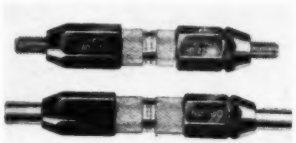
For additional information please use coupon on page 182

erates two pistons affording such displacement of fluid as to increase the closing speed of the vise jaw. The vise is opened automatically by pressure of an oversized coil spring. The jaw is stopped at any desired position by removing pressure from the release pedal.

C-59—Reversible Plug Gages

A new line of plug gages that gives twice the wear life, by reason of its reversible gaging members, is being marketed by Pratt & Whitney, Division Niles-Bement-Pond Co., West Hartford, Conn. When a member has worn below size it can be replaced easily and quickly with the other end by unscrewing the colored locking nut (green for go and red for not go), reversing the gaging member in the bushing and screwing the locking nut on the handle.

These plug gages are regularly furnished as cylindrical or thread plugs. Cylindrical members are made to American Gage design standard in sizes from 0.030 in. to 0.510 in., in steel, chromium plate and carbide. Thread gage members are furnished to X tolerance for checking NC and NF threads in sizes from 0 to ½ in. Other thread forms will be furnished on order.



Pratt & Whitney reversible plug gages.

All cylindrical and thread members are hardened, ground and precision lapped to close tolerances. The P&W "Pilot Feature" may be added to cylindrical members above 0.240 in. in dia to facilitate easy entry into close tolerance holes. Convolution and chip grooves are provided on thread members in accordance with standard practice.

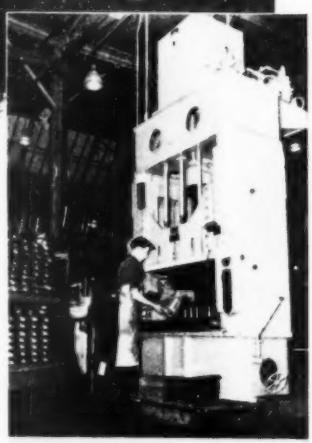
C-60—Motorized Hand Truck

Comet motorized hand truck

Capable of carrying 2000 lbs on level hauls with no carrying effort on the part of the operator, a motorized hand truck offered by the Comet Mfg. Co., Inc., Minneapolis, Minn., is powered by a four-cycle 1½ hp gas engine. Full chain - drive and centrifugal clutch transmit power through a jack-lift to heavy duty demountable rubber tired wheels. Finger - tip control allows smooth starting and stopping with speeds from 2 to 5 mph under capacity loads. Said to be effective for heavy loads, long hauls, rough flooring or gravel, inclines or ramps, it can haul loads of 1500 lbs up short 20 per cent grades. The third wheel assembly provides 6 height stops for adjustment of load.

(*Turn to page 215, please*)

YA has Complete facilities for producing Quality Radiators



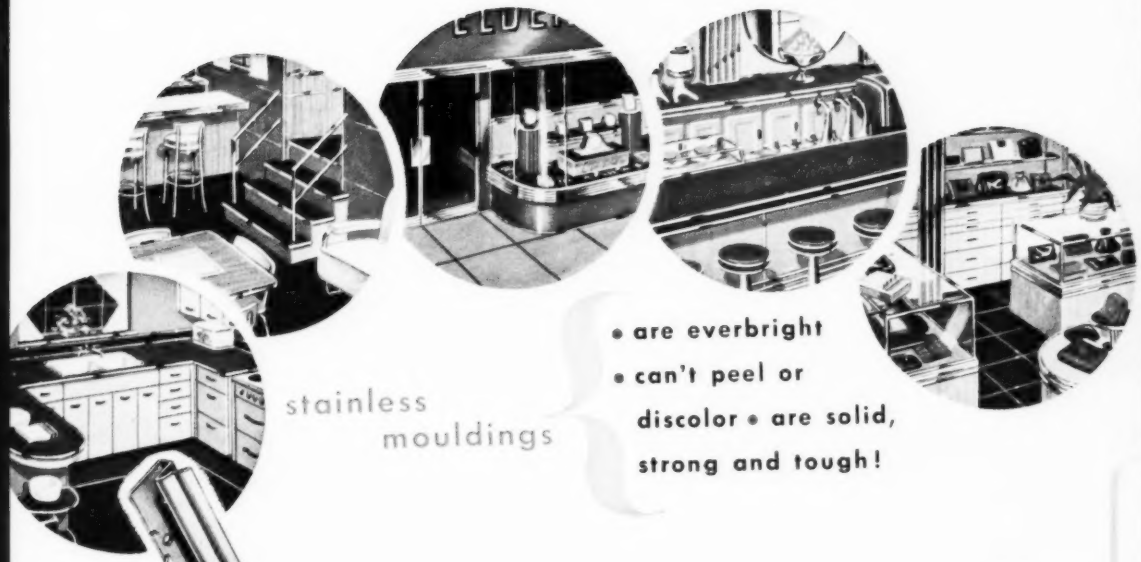
This heavy-duty hydraulic draw press is a part of Yates-American's complete, modern facilities for quality radiator production.

Our own foundry, completely equipped tool room, excellent pattern shop — these help give Yates-American the most complete facilities in the radiator manufacturing industry.

This means greater ability to satisfy exact requirements, better control of quality, delivery schedule second to none in the industry — more satisfactory service all the way.

We invite your inquiry on radiators engineered and designed especially to fill your requirements — for motor trucks, tractors, combines, industrial trucks, compressors, locomotives, power plants — wherever heat transfer equipment is required.

YATES-AMERICAN MACHINE CO.
HEAT TRANSFER PRODUCTS DIVISION
BELOIT, WISCONSIN



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- are everbright
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stainless mouldings fabricate better, deliver maximum consumer benefit, when you choose and use precision-made

Superior STAINLESS STRIP STEEL

Because SUPERIOR Stainless Strip Steel handles more easily in mouldings manufacture, you enjoy an extra advantage . . . and easier handling is a built-in factor because we have the specialist's *know-how*. We produce only strip steels . . . to strictly-maintained standards of quality and precision in every grade, temper, dimension and finish . . . SUPERIOR through and through!

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CORPORATION
CARNEGIE, PENNSYLVANIA

In Electric Razors, Too . . .

MALLORY TUNGSTEN CONTACTS

Lead a Busy Life

THE buzz in an electric razor is actually the noise of contacts making and breaking. They operate so fast that the resultant sound is a continuous buzz. But not too fast for those tough little Mallory Tungsten Contacts to handle. Their performance is flawless—their life so long that electric razors offer years of dependable service.

These Mallory Contacts have to be rugged to take a continuous beating like that. Thanks to the most precise and rigid processing control of the tungsten materials, Mallory Tungsten Contacts stand up. Thanks to the resulting interlocking grain structure that keeps down erosion, they perform for long periods of hard operation.

What's Your Problem?

From little electric razors to giant power plants—from airplanes to home circuit breakers—you'll find a wide variety of Mallory Contacts doing the job. Mallory has designed so many types of contacts that even if your problem is an unusual one there's a good chance that Mallory has the right contact to solve it. If not—just call on Mallory engineering to develop one for you. Do it now.

For all kinds of contact materials and service, you can't beat Mallory as a dependable, experienced source.

In Canada, Made and Sold by Johnson, Matthey & Mallory Ltd., 110 Industry St., Toronto 15, Ontario.

Electrical Contacts and Contact Assemblies

P. R. MALLORY & CO. Inc.

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SERVING INDUSTRY WITH

Capacitors — Rectifiers
Contacts — Switches
Controls — Vibrators
Power Supplies
Resistance Welding Materials

NEW PRODUCTS

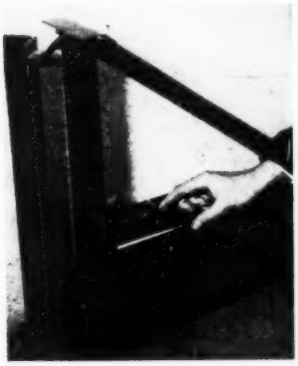
For additional information please use coupon on page 182

(*Continued from page 212*)

C-61—Portable Seismograph

A new tool to help engineers battle against vibration—a portable "seismograph" sentitive to frequencies as low as two cycles per second—has been developed by the Barry Corp., Cambridge, Mass., and the Westinghouse Electric Corp., Baltimore, Md. First application has been in the measuring of vibration of walls in a textile mill. Because of its compact portability, the instrument is expected to be used in analyzing vibrations on machinery and other equipment.

This industrial "seismograph," so-called because it utilizes the same principle employed in instruments registering earthquake shock, is a combination special seismic pendulum mounting designed and manufactured by the Barry Corp. and the Westinghouse Vibrograph.



Portable seismograph developed by the Westinghouse Electric and the Barry Corporations

The Vibrograph, the size of an ordinary box camera, ordinarily embosses a permanent record of vibrations on a transparent film. It records over the range of 600 to 15,000 cycles per minute and amplitudes as low as one ten thousandths of an inch or as great as one sixteenth of an inch. Mounted in the Barry frame, vibrations with a frequency as low as 120 cycles per minute can be measured even in swaying buildings where no steady reference point is available.

The Barry seismic pendulum provides a Vibrograph support whose natural frequency is lower than the frequency of the vibration to be measured. The Vibrograph thus tends to remain stationary in space. The pendulum is comprised of a triangular arm supported from a vertical column by means of frictionless elastic hinges. The low natural frequency is attained by mounting the Vibrograph relatively close to the hinges and setting a large mass in a pan at the free end of the arm. The Vibrograph includes a prod adapted to contact the structure whose vibration is to be measured. This contact is achieved, in the case of the wall of a building, by setting the seismic pendulum in such a position that the prod contacts the wall.

C-62—Impact Wrench

The Cleco Division of the Reed Roller Bit Co., Houston, Texas, has made addition to their line with a pneumatic impact wrench rated nominally for ⅝ in. bolts. This tool finds universal application not only for bolting up and nut running, but also for reaming, tapping and stud-setting. In addition, it is said to operate satisfactorily as a drill.

Based on a new principle of impact, the manufacturer has eliminated entirely the use of springs and other fragile parts. The tool is reversible.

(*Turn to page 220, please*)

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METAL PARTS WASHER

Write today for FREE booklet on Blakeslee Metal Parts Washers to answer your particular cleaning problems.

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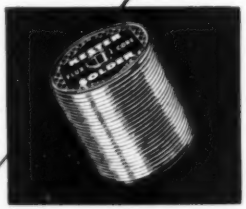
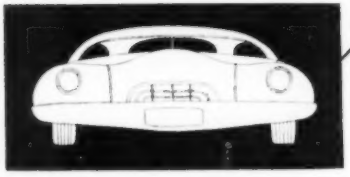
50 Years of Progress with Kester Solder

A great many parts of the automobile of 50 years ago were made of brass or copper and had to be soldered. Today, Kester Flux-Core Solders are a necessity for good automotive assemblies even as they were in those early days.





FREE—TECHNICAL MANUAL

Send for Kester's new 28 page manual, "SOLDER and Soldering Technique" . . . a complete analysis of the application and properties of soft solder alloys and soldering fluxes

Standard for the Automotive Trade Since 1899

Kester soldering fluxes . . . salts, paste, and liquid . . . are available in several handy-to-use units. The finest fluxes made for automotive work.

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KESTER SOLDER

NEW Products for AIRCRAFT

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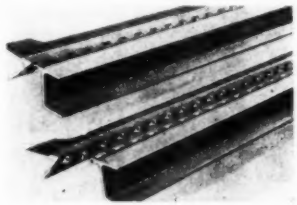
U-14—Continuous Extruded Hinge

A new type of continuous hinge or connector which combines structural factors with the usual functions of these parts, has been announced by



Moynahan extruded continuous integral hinge

Moynahan Bronze Co., Detroit, Mich. The company has perfected machinery making possible fabrication of extruded hinges or connectors for quick assembly in the structural aluminum alloys, 24ST and 75ST. Extruded hinges and connectors of these strong alloys, in any shape, are being turned out up to 12 ft in length.

This development permits greatly simplified design, production and assembly of aircraft, since it combines, as an integral part, a structural airframe member and hinge where heretofore it was necessary to assemble two or more parts.

U-15—Flight Recorder

A new type of flight recorder, which automatically records air roughness, altitude, and operation of automatic pilot and de-icing equipment on aircraft, has been developed by the General Electric Co., Schenectady, N. Y.

The flight recorder, which makes a record of flight data from take-off to landing, is accurate to measuring altitude changes as small as 10 feet. The record is made by a stylus, which scratches through a thin coating on a slowly-moving strip of paper and leaves a black trace.

(*Turn to page 218, please*)

Some of America's most modern automotive drives depend on Hydron Bellows Assemblies for sealing rotating shafts against leakage.
Have you investigated Bellows Assemblies lately?

More and more leading firms are improving the quality of their products by using bellows assemblies to seal shafts or valves against leakage, to control temperature and pressure and to transmit motion. Maybe you, too, should consider bellows assemblies before your designs are too far advanced. Our engineering department will gladly study your sketches and specifications in strict confidence and make a recommendation. This free service does not obligate you in any way. Write: CLIFFORD MANUFACTURING COMPANY, 563 GROVE STREET, WALTHAM 54, MASS. *Division of Standard-Thomson Corporation.* Offices in New York, Detroit, Chicago, Los Angeles.

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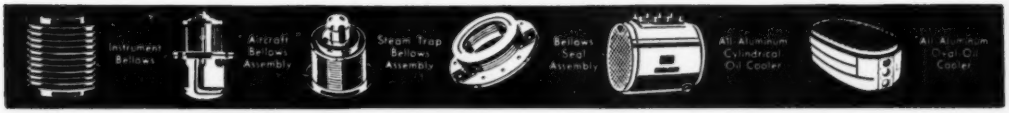
First with the Facts on Hydraulically-Formed Bellows



New AIRCRAFT PRODUCTS

For additional information please use coupon on page 182

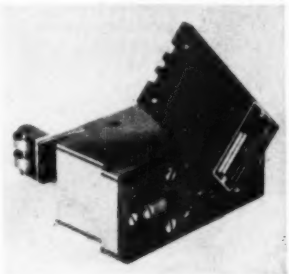
(*Continued from page* 216)

U-16—Propeller Reversing Control

A new control unit for reversing propellers developed by Consolidated Vultee Aircraft Corp., San Diego, Calif., performs all of the operations accomplished by the multiple control relay installation now in use and eliminates all reversing control relays.

The unit consists of a mechanically operated switch for reversing and unreversing operations and a coil-operated method for cutting off the reversing mechanism when the propeller is in full reverse on Hamilton Standard propellers and in positive pitch when unreversing on both Hamilton Standard and Curtiss Electric propellers. Because the unit is mechanically operated, the voltage required for the coil operation is far below that required by conventional systems. Consequently, reversing dependability is increased for a wide range of operating voltage.

Developed for Convair-Liners, the unit is adaptable to any airplane using conventional reversible-pitch propellers. It replaces the present reversing control switches which are actuated by the throttle mechanism when reverse pitch is desired.



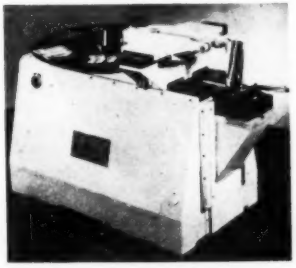
Convair control unit for reversing propellers showing wire terminal connections and cover plate.

U-17—Critical Blade Checker

The Pant-O-Scriber blade checker, built by the Engineers Specialties Div. of the Universal Engraving & Colorplate Co., Inc., Buffalo, N. Y., is an automatic machine for quick critical inspection of turbine blades and compressor vanes on jet plane motors.

The Pant-O-Scriber blade checker automatically traces the blade at the sections to be checked (usually 3 sections), and a co-ordinated rotating scriber automatically produces an exact scribing on a specially coated glass plate of each section as traced.

A precision master inspection chart, actual size of the blade, is used together with the scribed plate for inspection purposes. The scribed plate and the inspection chart are placed face to face to a pre-determined registered position and the scribed blade profile and the master inspection chart are then projected at any desired size on to a white opaque projection screen, using a standard make vertical lantern slide projector.



Engineers Specialties Pant-O-Scriber blade checker

This organization makes them right—and at reasonable cost. Regarded by an ever increasing number of manufacturers as the ideal source for high grade mechanical springs, all sizes and types, also small stampings and wire forms. Exceptionally prompt service—1 spring or a carload. Send blueprints or samples for estimate to Illinois Coil Spring Company—Chicago 39, Illinois.

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Interesting new bulletin, "BRIEF GUIDE for SPRING BUYERS," tells in plain language what a good spring is and how to get it without excessive cost.

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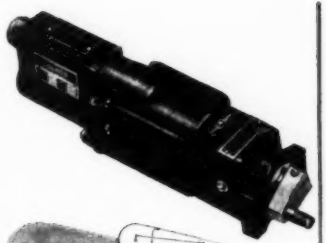
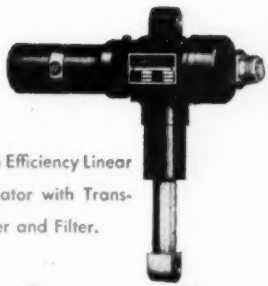


Trim Trol

High Torque Rotary Actuator with Zero Backlash Transmitter and Filter.



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Lineator

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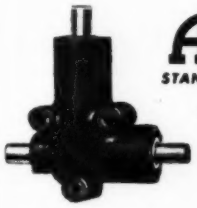
Right Angle Rotary Actuator with Transmitter and Filter



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STANDARDIZED UNITS

Standardized Precision Right Angle Units. Pressurized Shaft Seal Available.

- **IN PRODUCTION FOR THE LATEST AIRCRAFT**
- **MEET ALL LATEST SPECIFICATIONS**
- **ALL ACTUATORS *PRODUCTION TESTED* FOR ELIMINATION OF RADIO NOISE**

TRIM TROL

Specifically designed for Trim Tab control and used on the latest aircraft. It is intended for installation in the leading edge of the control surface where it may be employed for some balance to save weight.

ZERO BACKLASH Cooper Shaft plus SIMPLICITY OF INSTALLATION permits operating the tab directly with a single link. This arrangement utilizes varying mechanical advantage increasing with the load. Positive overtravel stops prevent damage to structure. Limit switches and position transmitter externally adjustable.

LINEATOR

High efficiency ... yields operating loads to 1500 pounds with low basic weight. Static capacity over 5000 pounds. Performance characteristics variable to suit application. Limit switches externally adjustable. Presently employed with synchronizing control unit in powered flight control system of an advanced fighter to obtain automatic trim control as a function of speed.

ROTORAC

Right angle type for driving screw jacks or similar mechanisms. Typical rating 15 inch pounds at ... on 3 minutes out of 15 duty cycle. Higher ratings depending upon application. Wide variety of gear ratios available. Limit switches externally adjustable.

ANGLgear

Standardized right angle bevel gear drives for use in either manual or power operated systems. Specifically designed for the exacting requirements of the latest military and commercial aircraft but are applicable to many high grade industrial applications which require capacity, precision and durability beyond the limitations of commercial products. Anglgear units combine high load capacity and service life with low weight.

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NEW PRODUCTS

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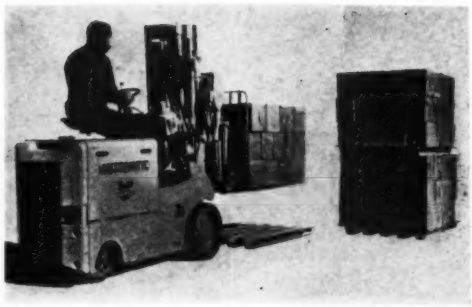
(*Continued from page 215*)

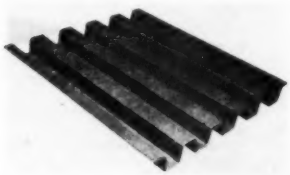
C-63—Push-Pull Device Plus Special Pallet

A multiple-forked push-pull attachment for Skylift electric fork trucks and a special corrugated metal pallet for use in conjunction with it have been designed by the Automatic Transportation Co., Chicago, Ill., to make possible completely mechanized shipment of merchandise without any pallets leaving the plant.



Automatic's push-pull handling attachment for Skylift electric fork trucks.

With this new handling system, loads are originated on sheets of heavy paper. Paper and load are then drawn onto the forks of the truck by operation of the push-pull attachment. The forks lift the paper and load slightly and place both on the corrugated pallet. The pallet has two sets of openings (by reason of its corrugation). Choice of openings permits the forks of the truck to lift the load and pallet together for carrying or stacking, or to remove merely the load and its sheet from the pallet.



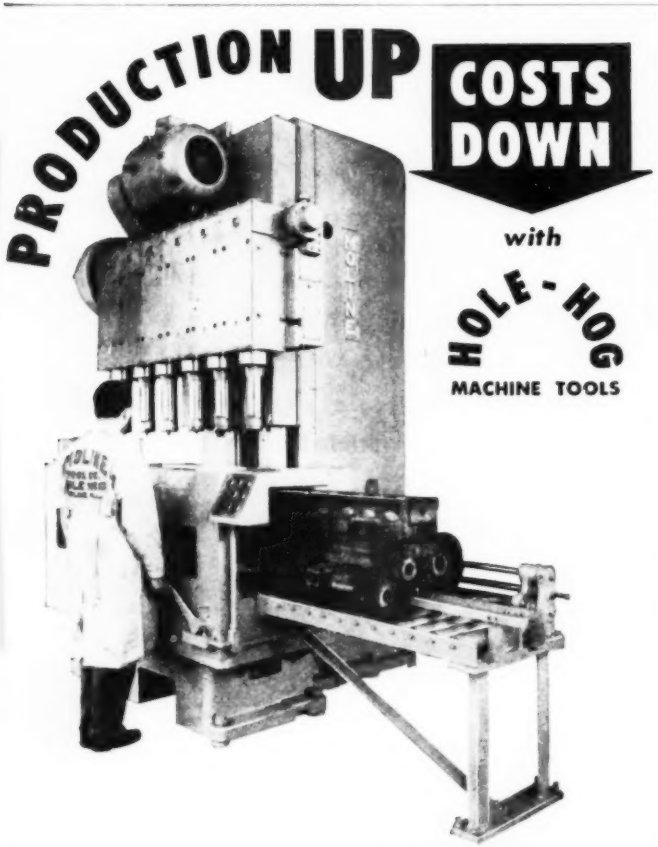
Automatic's corrugated metal pallet eliminating shipment of pallets in transit.

When ready for shipment out of the plant the load and sheet, still on the pallet, are detiered and taken to the shipping dock. There the forks are inserted in the second set of openings in the pallet, and the load together with the paper sheet is lifted clear of the pallet. The truck then takes the sheet-borne load into the box car and the new attachment pushes it into position, resting on the sheet.

After transit the load and sheet are removed from the box car by being pulled onto the forks by the pull device and placed again on a special pallet for stacking.

C-64—Flexible Chain Conveyor

Chain-O-Flex, put out by the Chain-O-Flex Corp., Franklin Park, Ill., is a new flexible packaged-product chain conveyor for use where a constant flow



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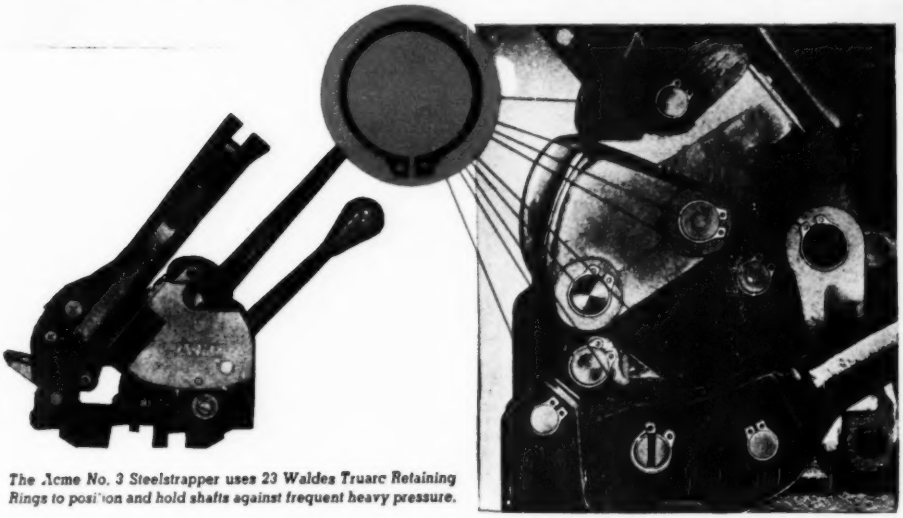
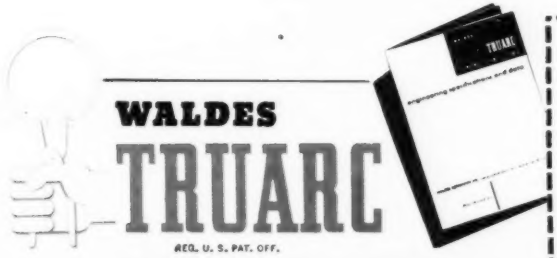
23 Truarc rings permit changeover to centerless grinding savings



The Acme No. 3 Steelstrapper uses 23 Waldes Truarc Retaining Rings to position and hold shafts against frequent heavy pressure.

"The use of Truarc Retaining Rings permits centerless grinding of pins instead of plunge-grinding. This eliminates the problem of taper and reduces the required tensional tolerances of these parts," reports Acme Steel Company of Chicago. "Furthermore, use of Truarc rings gives the Steelstrapper smoother lines by eliminating unsightly projections. This results in a more streamlined housing, a definite sales advantage."

Making repairs is much easier too, because Truarc simplifies assembly and disassembly. Truarc rings are precision engineered, may be used over and over again, remain always circular to give a never-failing grip. Wherever you use machined shoulders, nuts, bolts, snap rings, cotter pins—there's a Truarc ring that does a better job of holding parts together. Truarc cuts costs, adds sales advantages. Waldes Truarc engineers will be glad to show how Truarc can help you. Send us your problem.



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MICHIANA Oil Filters are designed to do the one job of thoroughly absorbing a maximum amount of dirt, grit and other foreign particles to keep the lubricating oil clean. Clean oil is vital to engine efficiency and engine life.

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MICHIANA Oil Filters help conserve oil, eliminate waste and expense. With improved lubrication, longer engine life and satisfaction are assured. . . . MICHIANA PRODUCTS CORPORATION, Michigan City, Indiana.

A Good Oil Filter saves its cost many times over.

MICHIANA OIL FILTERS

NEW PRODUCTS

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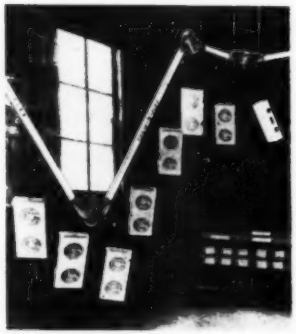
of material or assembled products is needed.

Quick assembly of any practical conveyor system pattern is a feature. All parts are bolted together like an erec-



Chain-O-Flex flexible chain conveyor.

tor set. All corners are highly flexible and adjustable to any desired degree, the system's efficiency increasing when the number of corners is increased.

Variable speeds are obtained by adjusting the band wheel on the drive unit which provides a 3:1 speed ratio. Multiple drive units may be used on extremely long systems.

C-65—Way Lubricating Dual-Purpose Oil

A new dual-purpose oil named Lubeway, available in two viscosities—Lubeway 150 and Lubeway 300—is being introduced by Sun Oil Co., Phila., Pa., for use in hydraulically operated machine tools that pressure-feed way lubricant from the hydraulic system.

The new oil is a blend of some of the ingredients used in Sunoco way lubricant and Sun hydraulic oils which have been "job proved" for more than 25 years.

The manufacturers claim it has all the stability and non-sludging characteristics of a good hydraulic oil, plus the metal-wetting and extreme-pressure qualities of a good way lubricant.

In tests it is reported Lubeway did not form any gummy deposits in pumps, lines, valves, or controls, but fully protected ways and slides in assuring smooth non-chattering table operation.

(*Turn to page 226, please*)

Improved Surface Qualities For Many Parts and Tools

A new member of the familiar Homo family, the Steam Homo is specifically designed for steam atmosphere heat treatment between 750 F and 1150 F. Typical of the specialized applications of this method are the treatment of—

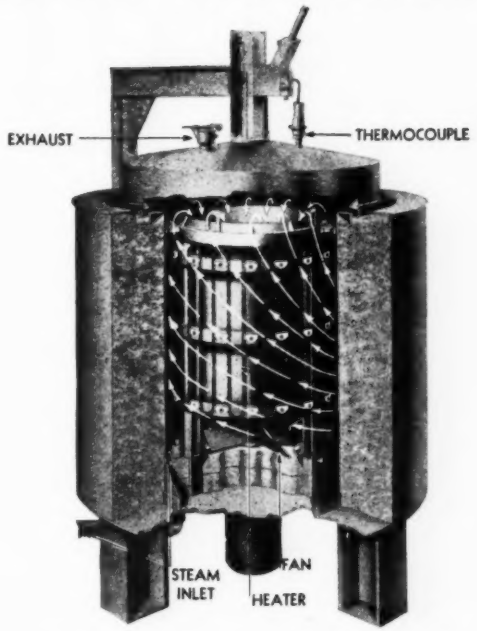
- powdered iron parts . . . for greater hardness, resistance to wear and corrosion
- twist drills and other tools . . . for longer life when cutting hard stock
- copper alloy parts . . . for easier cleaning before plating
- cast iron parts . . . for improved wear resistance
- steel parts . . . for faster, smoother machining and grinding characteristics

The Steam Homo Method combines four outstanding advantages:

(1) Steam atmosphere—for scale-free, blue-oxide finish.

(2) Homo forced-convection circulation—for rapid, uniform heat treatment.

A typical installation, showing milling cutters being loaded into furnace. Furnace Control panel is at right.



Used with or without steam, interchangeably, Steam Homo is adaptable for straight tempering at all usual temperatures, as well as for steam treatment. Driven by a powerful fan, hot steam swirls through the load, heats every piece rapidly and uniformly. Steam from a process line or small generating unit is fed through pipe in bottom of furnace.

(3) Accurate Duration-Adjusting Type of Micromax Electric Control, fully proportioning—holds work at precise temperature.

(4) Micromax Record shows furnace cycles.

Compact and simple to operate, the Steam Homo Furnace handles big loads of small parts quickly and efficiently. It is so clean and quiet that it can even be installed right on the production line. It is a complete, integrated assembly of furnace and control instruments . . . engineered to operate effectively together.

Our Cat. T-625 Sec. 1 will be sent on request, or, if you have a specific application, an L&N engineer will call. Write to Leeds & Northrup Co., 4966 Stenton Ave., Philadelphia 44, Penna.

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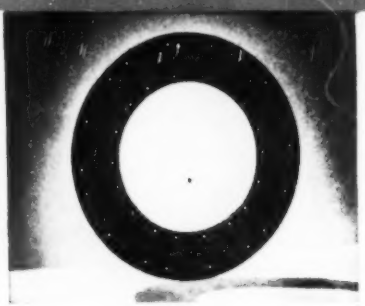
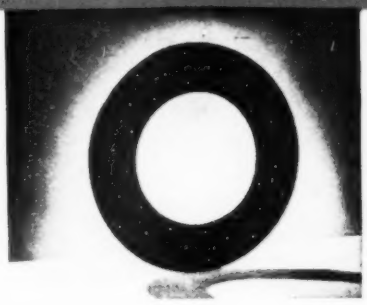
Jrl. Ad. T-620(27)

CLUTCH PROBLEM?





TWO OUTSTANDING EXAMPLES
of R/M's complete line of clutch facings and materials

VEE-LOK To keep clutch facings intact despite tremendous centrifugal force at high speeds, R/M developed VEE-LOK . . . a patented, locked-together, endless construction of V-shaped asbestos fabric, fully impregnated, compressed, heat-cured and ground to precision accuracy. The most widely used clutch facing in America today for original equipment, VEE-LOK offers greater spinning strength . . . greater efficiency in high speed clutches . . . more uniform wearing characteristics. Available for every automotive use.

SEMI-METALLIC Many heavy-duty applications require a facing that operates against steel and stands up under severe wear. R/M solved the problem with Semi-Metallic. This facing, compounded of asbestos and powdered metal, is bonded with a synthetic resin. Light in weight, it has heavy-duty stamina. It both conducts and dissipates heat. It will run wet (in oil) or dry with equal facility. It wears longer; the copper film it deposits forms a veneer which serves to resist abrasion as well as to dissipate heat.

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EQUIPMENT SALES DIVISION **620 Fisher Bldg., Detroit 2, Mich.**

445 Lake Shore Drive, Chicago 11, Ill. 4651 Pacific Blvd., Los Angeles 11, Calif.

1071 Union Commerce Bldg., Cleveland 14, Ohio

Factories: Bridgeport, Conn. Manheim, Pa. Passaic, N. J. N. Charleston, S. C.

Do you have a problem in clutch design . . . or in supply of clutch facings or materials?

Call in your R/M representative!

Take advantage of the advice and assistance of the company that's "first in friction materials" . . . for clutch facings as well as for brake linings.

Get the benefit of the pooled experience of four great R/M plants . . . each with its own engineering department, its own pilot plant, its own facilities for laboratory and road-testing.

Count on the kind of cooperation that the automotive industry has always received from R/M . . . in developments ranging from the *first* woven clutch facing through the latest improvements in oil-immersed clutches, and in band-type and disc-type automatic clutches.

Remember . . . when it comes to friction materials or automotive rubber products, consult your R/M field engineer, or write direct to headquarters. Please make your inquiry as specific as possible.

we'll face it for you!

R/M

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NEW PRODUCTS

For additional information please use coupon on page 182

(*Continued from page 222*)

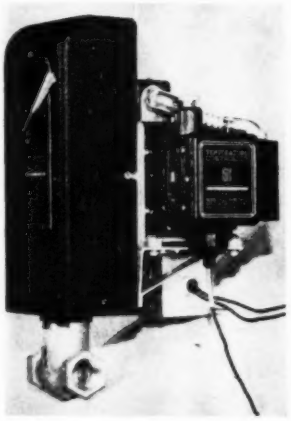
C-66—Piston Ring Of New Alloy

A top compression piston ring made by centrifugal casting and engineered around the new alloy called K-Spun has been developed by the Piston Ring Dept. of Koppers Co., Inc., Pittsburgh, Pa. It is now available for all makes of passenger cars, after a service period in streamline trains, airplanes, ships, trucks and buses. The "spinning" process by which the ring is made creates a new structure in the metal claimed by the company to add twice the strength and 50 per cent more spring to the ring compared to rings of good foundry-cast metal.

In centrifugal casting of K-Spun rings the special alloy is melted in an electric furnace and is then poured into a special casting machine which has a cylinder rotating at high speed. Centrifugal force pushes the hot metal to the cylinder walls, forming a cylinder within a cylinder as it cools.

The inner cylinder is then pulled out, and is heat-treated to give it the final qualities desired. Machines accurate to a few ten-thousandths of an inch make all surfaces uniform, and still other high-precision machines slice the cylinder into rings of the desired size, much as a bread-slicer cuts up a loaf.

C-67—Temperature Controller



Minneapolis-Honeywell combination motorized-valve temperature controller.

A compact combination motorized-valve temperature controller for industrial processes is being introduced by Minneapolis-Honeywell Regulator Co., Phila., Pa., providing on-off, two-position, floating or proportional control. The unit is available with temperature ranges between minus 50 F, and plus 700 F, with different sizes and types of valves. The self-contained assembly includes valves, linkage, motor, transformer and temperature controller. In operation, a remote-bulb thermal system positions a powerful motorized valve in response to temperature changes.

C-68—Industrial Service Winter Grease

A new soft consistency grease for winter use in heavy-duty industrial service has been developed by the Texas Co., N. Y., N. Y. To be known as H Grease O, the new material completes the H grease series which also includes H grease No. 1 and No. 2. The new H. Grease O has a line soap base, is gold in color and is particularly suitable for low temperature applications.

The H Grease series is designed for general purpose industrial service where higher viscosity mineral oils are required than in conventional cup greases.

HOOVER *achieves the superb quality of hand honed raceways mechanically*

The superior qualities of honed raceways were first realized in costly laboratory samples made by hand to determine just how fine a bearing could be. These samples set new standards of precision and uniformity . . . longer life . . . greater load capacity. It remained for Hoover engineers to develop the specialized machines to achieve hand honed quality mechanically. Now Hoover ball bearings, with the plus values of honed raceways, may be adopted at reasonable cost as standard equipment on all commercial products of quality. Write, on your letterhead, for a copy of the Hoover Engineering Manual.

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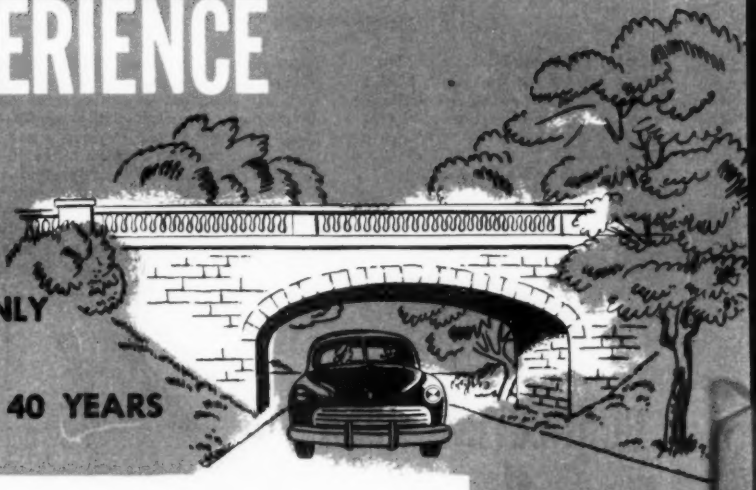

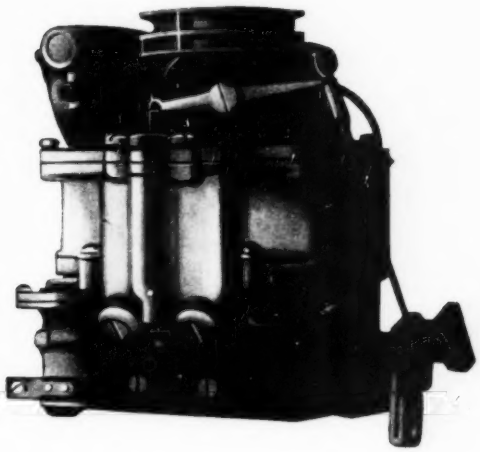

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• Service Sales: South Bend, Ind.

Bendix
AVIATION CORPORATION

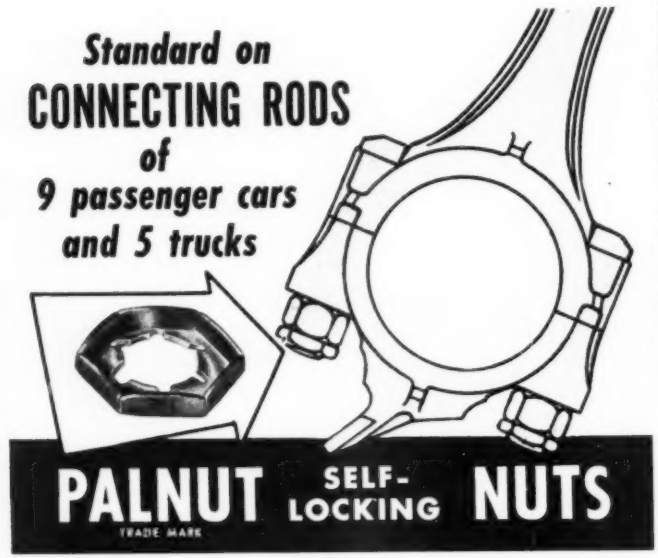
Publications Available

(*Continued from page* 182)

remedy, paint products. Complete instructions for the use of Rustrem are included. Other products described in the bulletin are Heat-Rem heat resisting aluminum paint; Chem-Rem chemical resistant black paint and Wood-Rem wood preservative paint.

A-88—Metal Quality

Drop Forging Association—A new 60-page reference data booklet called Metal Quality has been issued by the Technical Committee of the Association. It describes and illustrates development of metal quality progressively throughout hot working operations, from the blast furnace to the finished forging. A discussion is presented of forging quality steel and the proper selection of metals for forgings. Forging procedures of various kinds of parts are outlined, such as parts with thin sections, projections, holes, etc.



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Wherever you require vibration-proof fastenings — on engine, chassis or body — use PALNUT Self-Locking Nuts and cut your assembly costs at the same time. For heavier assemblies, apply PALNUTS on top of regular nuts; for lighter assemblies, use PALNUTS alone. Low in cost—easily, speedily assembled with hand or power drivers—may be removed and re-used. Send details of your application for recommendation and free samples. Literature on request.

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Millions of all types of PALNUTS
used monthly on connecting rods, brake parts, engine mountings, body hold down, etc.; also on moulding strips, medallions, lights, dash, glove compartments, etc.

A-89—Hydraulic Surface Grinders

The DoAll Company—Hydraulic Surface Grinders is a new catalog describing and illustrating the latest DoAll Surface Grinders. Their flexibility and adaptability for a large variety of work is explained by picturing the construction of the grinders. Also included in the catalog are specifications and photographs of six models which stem from two basic machines weighing 2500 and 2970 pounds. The six models include machines for toolroom, production, plunge grinding and a "handgrinder" operated hydraulically.

A-90—Aviation Booklet

Curtiss-Wright Corp.—A new brochure has been published summarizing the company's history and reporting on current and future activities as a part of the program marking its 40th Anniversary. The brochure, entitled First in Flight, comprises 32 pages. It was designed to describe briefly the role the company and its predecessors have had in the advancement of modern aviation. The booklet contains many illustrations.

A-91—Metered Lubrication

Bijur Lubricating Corp.—A new booklet on how to design a lubricating system into the small machine is available. It shows how the small-scale Bijur system can be applied to solve the multiple oiling problems of small machines and isolated units of large machines.

A-92—Conveyors

May-Fran Engineering, Inc.—Two new booklets, one on conveyors and the other on conveying equipment are available. The conveyor booklet describes and illustrates the Little Hustler, a small, easily portable, fully adjustable conveyor. Specifications and line drawings of the machine are included. The second booklet describes and illustrates May-Fran steel-belt carrying equipment.

A-93—Control Valves

Hydraulic Equipment Co.—New literature on equipment for industrial oil-hydraulic control systems is available as follows: V12 Series plunger-type control valve with built-in pressure relief. V13 Series plunger-type control valve with parallel circuit to operate two, three or four single-acting or double-acting cylinders simultaneously; V-16 Series plunger-type control valve with built-in press relief and check valves.

A-94—Universal Cutter and Tool Grinder

Gallmeyer & Livingston Co.—An attractive booklet describes and illustrates

(*Turn to page* 230, *please*)

Cork takes the "Creep" out of rubber gaskets

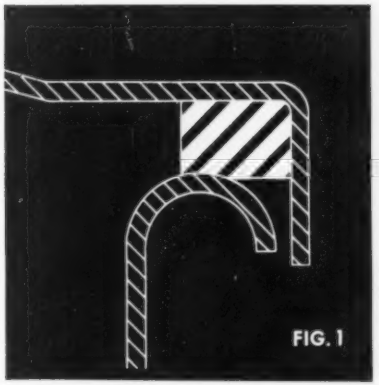
FIG. 1

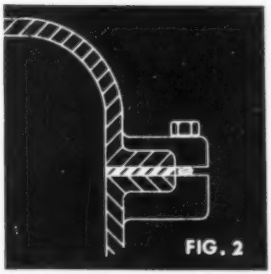
FIG. 2

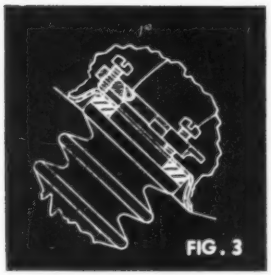
FIG. 3

Straight synthetic rubber is an excellent gasket material—except for one shortcoming. It side flows under pressure and tends to "creep" out of place. Even when properly seated during assembly, a straight rubber gasket may later creep enough to cause a failure in the field.

To eliminate creep, a truly compressible material, like Armstrong's cork-and-rubber, is used. Truly compressible materials do not side flow. They deflect only in the direction of the applied load. Consequently, they do not tend to creep. And with most fluids, the resistance of cork-and-rubber is equal to comparable straight synthetics.

Cork-and-rubber simplifies many sealing jobs. Take, for example, the problem of sealing the rolled edge tank shown in figure 1. Pressure-tight sealing of these tanks requires an impervious gasket. But straight rubber tends to creep off the rolled edge and slip into the tank.

Armstrong's cork-and-rubber, on the other hand, conforms to the rolled edge. It won't slip. And it holds the required pressure as well as straight rubber.

Figure 2 shows the flange of an oil-filled, water-immersed unit. Even under these conditions, truly compressible cork-and-rubber gaskets seal without creep.

The porcelain transformer bushing in figure 3 is sealed by a truly compressible cork-and-rubber gasket. The porcelain is safely cushioned against breakage. And even if flanges are oily, creep is retarded by the surface friction provided by the exposed cork particles.

Versatile cork-and-rubber may help solve your sealing problems, too. Your Armstrong representative may be able to suggest methods and materials to help simplify construction and reduce cost. He will supply samples of materials for experimental use. Call your nearest Armstrong office today.

Send for this Gasket Handbook

You'll find useful application and specification data in the new, enlarged 24-page booklet, "Armstrong's Gasket and Sealing Materials." It contains up-to-date data on synthetic rubber, cork-and-synthetic-rubber, cork composition, and fiber sheet sealing materials.

This booklet includes ten technical discussions of the factors influencing modern gasket and joint design. It also suggests methods of putting Armstrong's stock materials to specialized uses in such fields as radio, electrical, automotive, petroleum, and transportation industries. Also included are typical applications and current government specifications.

For your free copy, fill in coupon at right and mail today.

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Please send me at once a copy of the new 24-page booklet, "Armstrong's Gasket and Sealing Materials."

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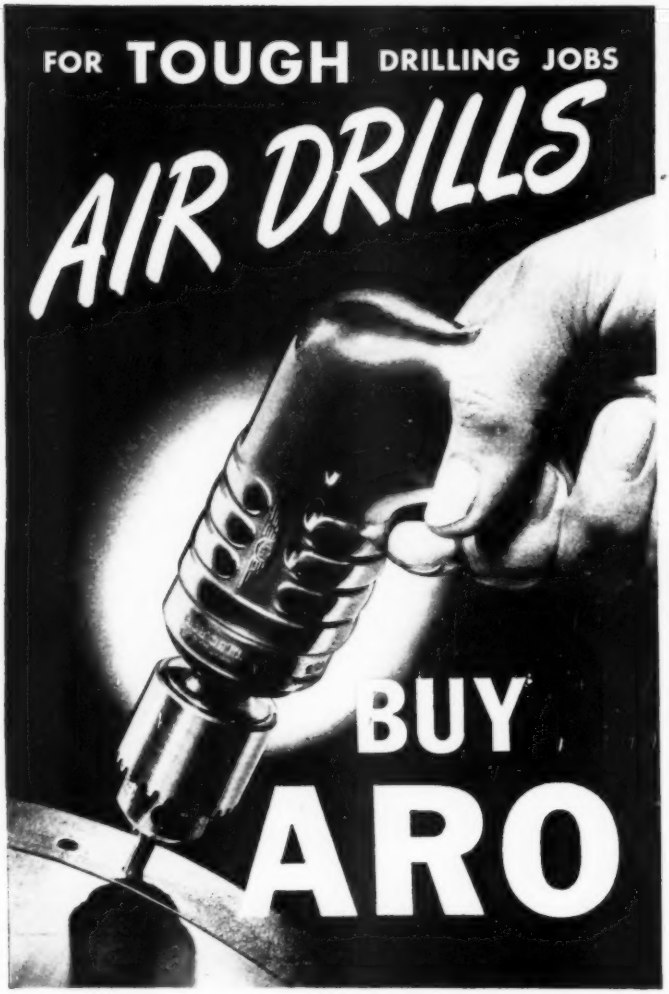
Synthetic Rubber Compounds • Cork-and-Rubber Compositions
Fiber Sheet Packings • Rag Felt Papers • Natural Cork



Metal alloy specifications are getting tougher . . . requiring drills with special speeds to insure faster and cleaner drilling, reaming and countersinking!

ARO offers controlled gear speeds of 17,000, 4,000, 2,500, 1,100, 750 and 450 RPM. Take your choice—There is a pistol grip lever or button throttle model in every speed range!

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the Grand Rapids No. 10 Universal Cutter and Tool Grinder. A full page illustration shows the grinder with Universal equipment, together with specifications. Various types of milling cutters are pictured and described and a page is devote dto the No. 55 Grand Rapids Hydraulic Feed Surface Grinder.

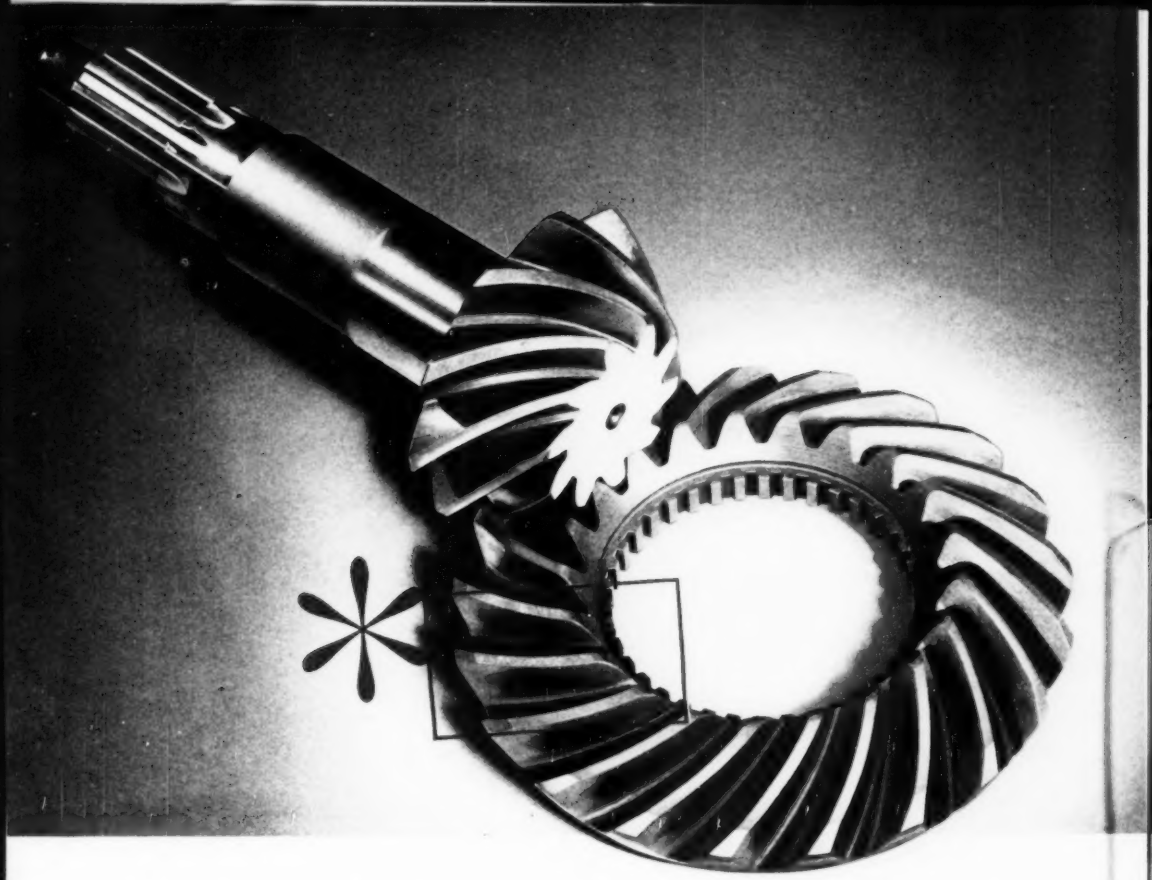
A-95—Replacement Spring Wall Chart

Tuthill Spring Co.—A new spring replacement guide covering the popular numbers in its complete line of automotive leaf springs is available. The chart lists the Tuthill spring number, vehicle model and year of replacements for all popular cars and light trucks. It is printed in three colors on rigid board. Details on spring dimensions and specific car models may be found in the Tuthill Spring Data Manual, Volume 8.

CALENDAR

Conventions and Meetings

Natl. Std. Parts Assn., Regional Business Mtg., Los Angeles .....Mar. 16
Chicago Technical Soc. Council, Annual Production Show, Chicago Mar. 14-17
SAE Transportation Mtg., Cleveland Mar. 28-30
Natl. Std. Parts Assn., Regional Business Mtg., Dallas .....April 6
Metal Powder Assoc. Annual Mtg. & Exhibit, Chicago .....April 5-6
Amer. Inst. Elec. Eng. Conf., Buffalo April 11-12
Amer. Soc. of Lubrication Eng. Annual Show & Convention, New York .....April 11-13
SAE Aeronautic Mtg., New York City .....April 11-13
Amer. Soc. of Metals, Western Metal Congress, Los Angeles .....April 11-16
Midwest Power Conference, Annual Meeting, Chicago .....April 18-20
Magnesium Association Annual Meeting, Chicago .....April 19-20
Salon International DeL' Aeronautique, Paris .....April 29-May 15
Automobile Old Timers Annual Luncheon, New York City.....April 28
Chamber of Commerce of the United States Annual Mtg., Washington May 2-5
Natl. Std. Parts Assn., Regional Business Mtg., Atlanta .....May 9
Amer. Management Assoc. Nat'l. Packaging Exp., Atlantic City May 10-13
Instrument Soc. of America, Annual Mtg., Toronto, Can. .....May 12-13
Soc. for Experimental Stress Analysis Mtg., Detroit .....May 19-21
Natl. Std. Parts Assn., Regional Business Mtg., Philadelphia .....May 22
Middle Atlantic Regional Automotive Show, Phila. .....May 23-30
SAE Summer Mtg., French Lick..June 5-10
American Inst. of Elec. Engineers, Swampscott, Mass. .....June 20-24
Amer. Soc. for Testing Materials Annual Mtg., Atlantic City..June 27-July 1
Amer. Electroplater's Soc. Annual Convention, Milwaukee .....June 27-30
SAE West Coast Mtg., Portland..Aug. 17-19
Instrument Soc. of America Convention, St. Louis .....Sept. 12-16
Society of Industrial Packaging and Materials Handling Engineers Annual Exposition, Detroit .....Oct. 4-7



These marks are proof of physical fitness

THESE spiral bevel gears have a long, hard-working, quiet life ahead of them, as you can see clearly by the untouched "test-marks" in the photograph at the right. These marks are made by coating the teeth with a pigment, then running the gears in proper position to remove the coating where tooth contact occurs. Observe the *uniformity* and the *localization* of tooth contact at the central portion of each tooth: proper for this application—proof of physical fitness for the job.

There's no magic to making gears as sound and as silent as these. We establish one *and only one* set of standards—then stick to it. Our men know our standard and hold to it—day after day—at every stage of operation from blanks to final lapping. That's the *only* way we know how to do business. If this fits in with your ideas, give us a call.

Our engineers can start from a sketch, print, or at any stage of the development. Any time you say.

✻ *Uniform contact, localized at the strongest portion of each tooth is proof of maximum wear.*

DOUBLE DIAMOND TRADE MARK GEARS

Made by

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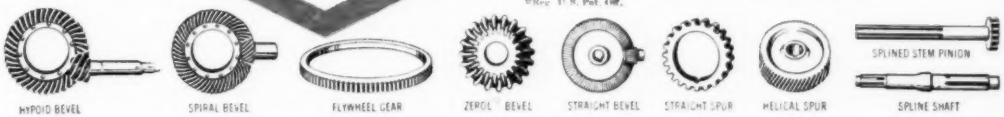
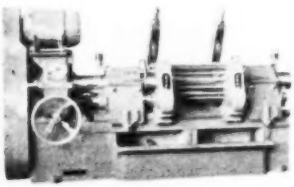


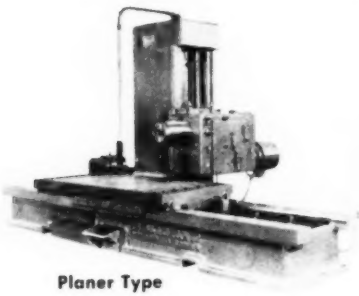
PRECISION PRODUCTION MACHINERY

DAVIS and Roto-Matic THOMPSON

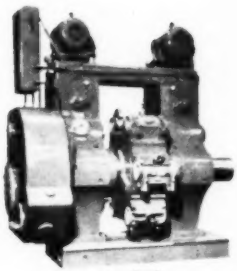
Milling Machines



1-A



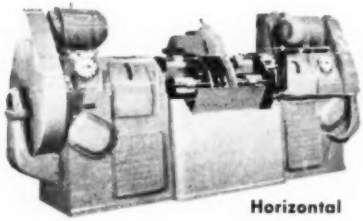
Planer Type



2-A

Drilling Machines

SV

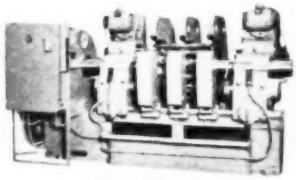


Horizontal

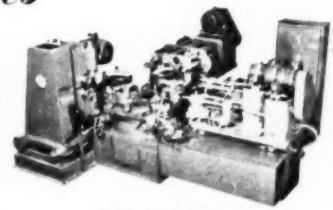
V

Special Machines

Boring



Mill & Center



Mill, Drill & Tap

Multiple spindles are coupled with continuous operation to obtain the maximum in production. Illustrations show representative types of developments made, but, many more are available for a wide range of applications.

Our General Catalog A-90 is available or recommendations can be made promptly on direct inquiry.

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Recent Developments in Fluid Sealing

by R. S. Rainey
Chief Engineer, National Motor Bearing Company, Inc.

IN THE fluid sealing industry, as in many other industries, a condition has developed during recent years where matters once considered relatively unimportant have taken on stature and complexities because of scientific advances.

For many years much major machinery, including automobiles, was developed with the seals as an afterthought. Time and again we who have worked on this problem have been called in after the basic mechanism was completely developed in an effort to save the design when no provision had been made for sealing. Thus, by the lack of a relatively small-cost part, a machine worth perhaps many thousands of dollars was rendered inoperative or deficient. In many cases designs had to be changed, at great expense, and customer ill-will had to be overcome, at further expense.

With the increase in speeds, temperatures and general complexity of automotive and many other types of equipment, sealing difficulties occurred repeatedly until designers became more conscious of the problem. This situation became especially acute during the war when equipment was required to operate for long periods without service, under extreme conditions.

As they became more aware of the sealing problem, and in an effort to solve it, many designers turned to complex mechanisms which not only increased the cost of their products but also, in many cases, made the cost of the sealing member greater than was necessary or justified by the requirements. Because of past difficulties the standard unitary seal which, under proper design and engineering conditions, had been used successfully for years, was often overlooked. In looking beyond this type of seal these designers have been, and are, overlooking the fact that tremendous advances have been and are being made in the standard seal.

Relatively Simple Product

While the standard type seal has always been a relatively simple product, it incorporates many variables which can be controlled to accomplish a seal adapted to a wide range of conditions. Its physical dimensions, width, diameter, and so forth, can be changed to meet a multitude of conditions and, more important, its sealing qualities can be widely varied. An oil seal might be described as an aggregation of tremendous trifles.

* * *

Among the many factors which have come under intense and remunerative study in bringing the unitary seal to its present state of efficiency and adaptability, the following are important: 1. Spring tensions; 2. Shape of sealing member; 3. Amount of shaft interference; 4. Combinations of different materials in multiple; 5. Relations of speed, temperatures and pressures in combination with all other variables.

Other developments, of even greater importance, have included the following: 6. Ability to vary the sealing material for practically any industrial fluid; 7. Ability to adjust the hardness or durometer of the sealing member; 8. New synthetic sealing materials, and improved leather processes and tannages; 9. Advances in knowledge of the use of dual sealing members.

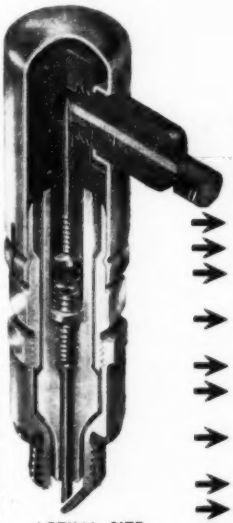
The result of all this is that we are finding an increasing number of applications now employing some complex face type of seal (such as farm equipment, tractors, track-tread units and other machinery working heavy dirt under adverse conditions) where a well designed unitary seal would give equal or

(*Turn to page* 234, *please*)

New! Different!

Atomic Flash
SHIELDED
SPARK PLUGS

WATERPROOF
OIL PROOF DIRT PROOF



ACTUAL SIZE

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Retail Price $1.25
*Cover .50

*Permanent after original installation.

- SHOCKPROOF—No exposed live parts.
- DAMAGEPROOF—FIREPROOF.
- LEAKPROOF—Electrically and mechanically.
- RUGGED—DURABLE—All steel-enclosed.
- MINIMUM INTERFERENCE—Radio FM, Television; grounded shield.
- COOLER OPERATION — 200% more cooling area.
- QUICKER STARTING—Hotter, fatter spark.
- CUTS FUEL CONSUMPTION—Leaner gas mixture.
- MINIMUM WEAR, CYLINDER AND RINGS — And reduces carbon.
- 20,000 MILES and more.
- BULLDOG GRIP TERMINAL CONNECTION.
- REDUCED ELECTRODE EROSION — 42% more sparking area with same gap.
- QUICKLY AND EASILY INSTALLED—Uses standard wrench.
- SMOOTHER ENGINE OPERATION at all Speeds.
- AERO TYPE INSULATOR Alum. Oxide.
- NO RUBBER PARTS—Or other components to decay.

AEPCO
Atomic Flash
SHIELDED SPARK PLUGS

TYPES FOR ALL:

Automobiles, Trucks, Buses, Motorcycles, Tractors, Inboards, Outboards, Elec. Gen. Lawn Mowers, Motorbikes, Industrial Equipment, Aeroplanes.

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AMERICAN ELECTRIC PRODUCTS CORP.
15 Park Row, New York 7, N. Y.

better performance at far lower cost, with regard to both the sealing unit itself and the manufacture of the surrounding equipment.

The purpose of this article is to give readers a better knowledge of the types of seals now available, suggestions as to the applications of existing as well as special types of seals, and some notes on the use of seals.

Types of Seals

Single Spring Loaded Sealing Member, Metal-Encased. This is by far the most common seal, representing at least 80 per cent of all seals manufactured. (See Fig. 1.) This seal is made with leather, or with rubber or other synthetic sealing members. Leather is most commonly used, being indicated for slow speeds, low temperatures, and heavy-duty machinery where finishes are not the best. The seal is of especially rugged construction to meet the rather rough assembly practices.

The general performance of the leather seal has been improved 30 to 40 per cent over its performance of only a few years ago, as a result of recent developments in tannages, shapes of sealing members, methods of trimming, and in molding practices. This seal is now

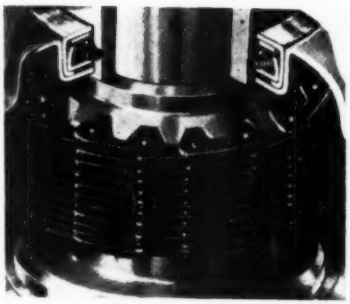


Fig. 1—Cutaway view showing oil seal in timing chain cover. It is spring-loaded, metal-encased type.

capable of operating continuously at temperatures over 200 F; can stand peripheral speeds up to 2000 fpm; and is capable of considerable life on machinery with shaft finishes as rough as 50 to 60 rms. Because it is made of a relatively inert material, however, it does not have the runout ability of the more flexible synthetics.

Fig. 2—A new development is this spring-loaded flex seal.

Synthetic single member spring loaded seals have received the most development work in the last few years. Careful compounding of new synthetics has developed seals capable of continuous operation with zero leakage under temperatures of over 300 F, speeds of 3600 fpm, and with the ability to stand runout consistently as high as .030 indicator. The smooth surface of the synthetic is more sensitive to shaft surface than leather. However, common practice of

Fig. 3—Sectional view of a flex seal used where extreme wear and runout exist.

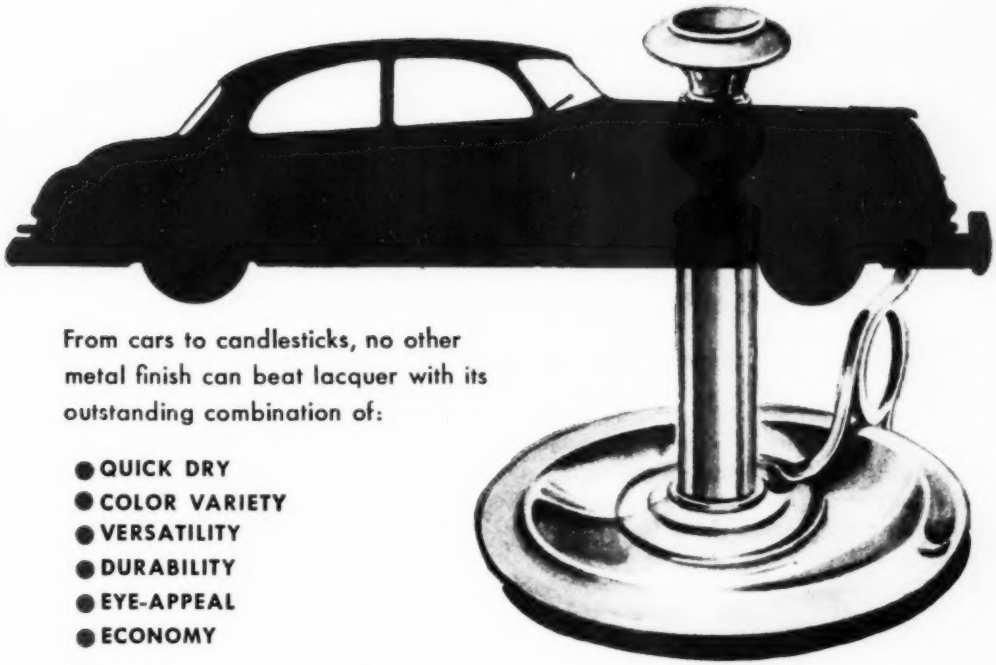
using 15 to 20 rms turned shaft finish results in a seal life of several years.

Considering all angles, there is considerable inherent advantage in synthetic seals in that all factors of production—and especially the constancy of the sealing member—are controllable. These seals are generally specified on all high speed applications such as engines and pinions, transmission and gear drives of all sorts.

Another important new development in the spring loaded type of seal is the flex seal (Fig. 2). The added convolution in the flex section increases the ability of the seal to withstand runout,

(*Turn to page 236, please*)

LACQUER



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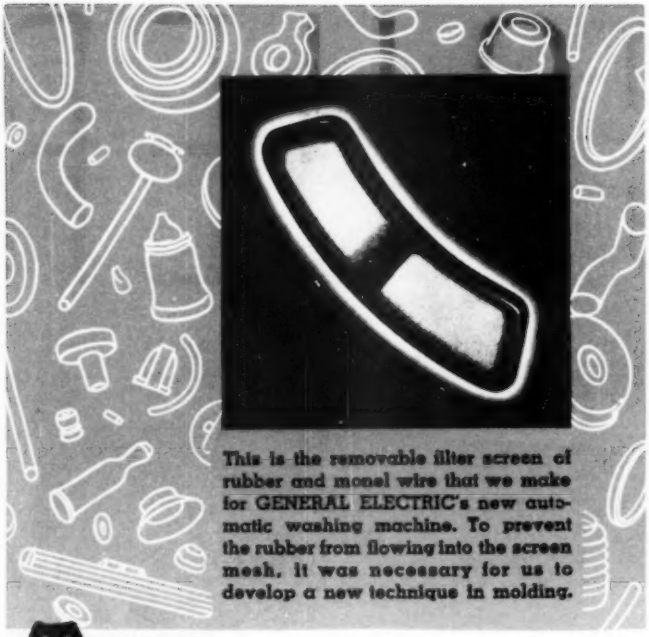
IS BEST!

Hercules does not manufacture lacquers, only the basic materials from which they are made



This is the removable filter screen of rubber and monel wire that we make for GENERAL ELECTRIC's new automatic washing machine. To prevent the rubber from flowing into the screen mesh, it was necessary for us to develop a new technique in molding.

Tyer has been doing things with rubber for ninety-two years and during that time has made many contributions to the art. In earlier days Tyer originated white rubber and elastic webbing. During the late war Tyer's contributions ranged from giant rubber pontons to tiny ear plugs made to a tolerance of one thousandth of an inch. Since the war Tyer has resumed its leadership in service to industry. Many of the country's finest and most famous products have at one or more vital points a rubber part made by Tyer. These manufacturers know that Tyer can do unusual things with rubber.

Working closely with the inventor, REGENT PARQUET CORP., we developed the thin rubber frame that separates and holds the wooden pieces in this new flooring.

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Tyer RUBBER COMPANY

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eccentricity, whip, and other unusual operating conditions. This seal is used in many places, such as steering mechanisms, where wear on bearings must be anticipated; also in places, such as automotive rear wheels, where a considerable amount of shaft whip is expected. An added advantage of the seal is the rubber covered OD, which assures a seal on the OD. This can be designed in many different forms to clear bearings or surrounding mechanisms.

Further development of the flex seal is shown in Fig. 3. This seal is used where extreme wear and runout are involved, such as on steering equipment, and on heavy-duty equipment such as road graders, tractors and farm implements, where the extra flex sections are held to the shaft with an auxiliary steel ring which assures that the sealing member will follow the shaft regardless of the latter's contortions.

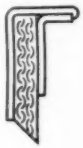


Fig. 4—Construction of a springless leather seal.

Springless Oil Seals, Single Sealing Members. These seals, also, are made from leather and various types of synthetics. They are often used where complete sealing is not required and where slight leakage is not objectionable. Springless leather seals (Fig. 4) are often specified in applications where heavy grease is to be withheld and temperatures are low, and speeds do not exceed 1000 fpm.

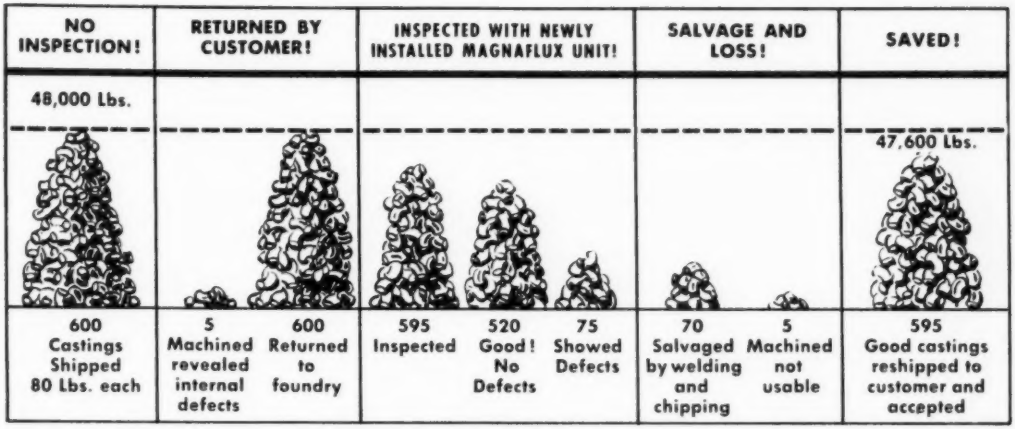
The most versatile of the springless designs is the steel supported synthetic seal. Three different designs of this seal for specific types of applications are

Fig. 5—Conventional springless oil seal incorporating synthetic material for medium pressure applications.

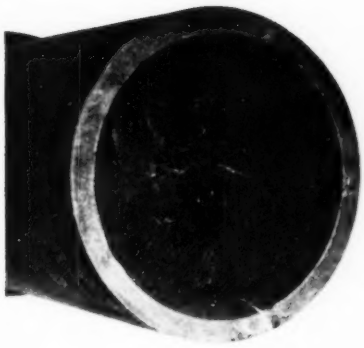
shown in Figs. 5, 6 and 7. Generally speaking, all of these designs are superior to springless leather seals and are available for a wider range of applications. They retain lighter oils, and withstand greater temperatures and higher speeds than other springless designs.

The most common design of these springless synthetics is shown in Fig. 5. This type is often specified for wheel applications which are well designed and have good sealing surfaces. This seal is capable of medium pressure, but with slight redesigning can withstand pressures from 70 up to 100 psi.

(*Turn to page 238, please*)



SAVED! 99% of a 24-ton rejected order



Not only are non-visible external defects revealed, but indications of the subsurface shrinkage cracks (inside this casting) are equally as easy to bring into prominence—with Magnaflux inspection.

● A new Magnaflux* Unit, recently installed in a prominent midwest foundry, practically paid for itself on the first job. This foundry completed and delivered 600 large steel castings—24 tons!—to one of their preferred customers. Machining the first five castings uncovered large subsurface shrink cracks, which prompted the customer to return the entire lot as rejects. Shipping costs both ways were a complete waste.

At this point, the newly installed Magnaflux Unit was used to test the 600 castings to find 525 good, 75 with the defects (including the above five). By chipping and welding all the remaining 70 were fully repaired, again Magnafluxed to assure final soundness, and reshipped to be accepted and used by the customer.

The chief inspector of this foundry now, having more experience using Magnaflux, gives it his highest approval as a regular production foundry tool. He uses it for gating and casting control of all new castings which they make.

Perhaps Magnaflux Magnetic Particle Inspection Units are what you need, to overcome manufacturing losses and strengthen control of quality in your plant. Write for full particulars today.

**Magnaflux, Reg. U. S. Pat. Off., a trademark of Magnaflux Corporation applied to its equipment and materials for magnetic particle inspection.*

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The design illustrated in Fig. 6 is intended primarily for use where temperatures and speeds are high, but where eccentricity and runout are low and running parts are accurately made. This seal is limited, however, to not over 5 to 10 psi pressure, and is a compromise seal when space limitations forbid using a spring-loaded type seal.

The seal shown in Fig. 7 is primarily a pressure seal. It has been operated successfully up to 600 psi fluctuating pressure, at minimum speeds. It is also suggested for extremely small cross-sections of ID vs. OD, where a relief design is not possible. This seal is often used on shafts of ⅜ in. diameter and below.

Lately we have been making a good many of our springless synthetic seals with a coating of rubber on the OD (Fig. 8). This design is useful in narrow sections and on relatively small ODs. It assures a leak-tight fit on the OD. In cases where some type of sealer on the OD of the metallic oil seal is required to assure no leakage, the use of this rubber-coated seal permits a considerable saving in production time and cost.

Dual Member Seals. These seals very effectively illustrate the situation discussed at the beginning of this article. For example, there has been a great deal of money spent on very expensive end and face type seals for use in such equipment as disk plows, track-type tractors, and other farm and industrial machinery working in heavy dirt and muck. With proper research, engineering and design, it has been possible to develop a shaft seal for these uses that is proving as effective as, and much cheaper than, the expensive end or face type seal. This seal (Fig. 9) effectively combines two rubber sealing members, one of which is spring loaded and the other springless.

Dual member seals are produced in a wide variety of designs for many specific applications. The most common is a single spring loaded member of leather, or synthetic, with an auxiliary member produced in a wide range of materials. When speed is low and dirt conditions are very severe, this auxiliary often is made of rubber. At medium speeds with severe abrasive conditions—especially when the abrasive material is not too fine—a leather auxiliary member is used instead of rubber, with the main member being leather or rubber depending on conditions. Wheel positions on trucks and tractors and other farm machinery operated at medium speeds are good examples of the application of this seal.

Fig. 6—Synthetic material seal use where temperatures and speeds are high, but limited to where eccentricity and runout are held to close tolerances, and pressure not over 10 psi.

At relatively high speeds, with lighter abrasive conditions, such as automobile pinions, transmissions, etc., a felt auxiliary member is used, with rubber usually being indicated for the main member. Leather also may be used for the main member under some conditions.

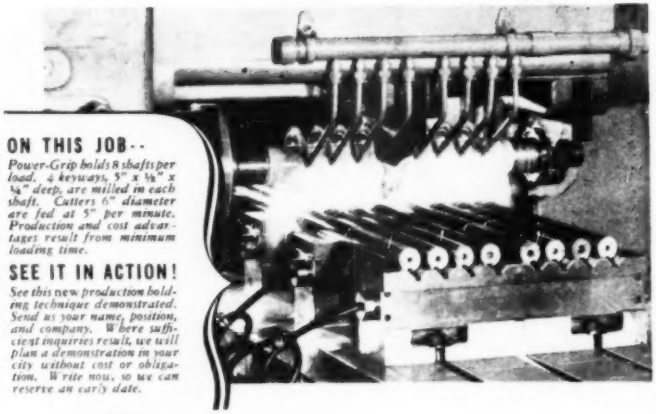
Other forms of dual seals include two spring loaded members pointing in opposite directions, made of either rubber or leather depending on speeds and temperatures, to separate two different industrial fluids; double sealing members, of either leather or synthetic, pointing in the same direction to withstand excessive pressures; and other variations designed for specific conditions.

Fig. 7—High pressure seal for pressures up to 600 psi.

While dual seals possess many definite advantages when applied under specific and suitable conditions, they also have a number of limitations which should be given consideration in any study of their use. These include the obvious fact that

(*Turn to page 292, please*)

LOOK—NO CLAMPS!



ON THIS JOB--

Power-Grip holds 8 shafts per load. 4 keyways, 5" x ⅛" x ¼" deep, are milled in each shaft. Cutters 6" diameter are fed at 5" per minute. Production and cost advantages result from minimum loading time.

SEE IT IN ACTION!

See this new production holding technique demonstrated. Send us your name, position, and company. Where sufficient inquiries result, we will plan a demonstration in your city without cost or obligation. Write now, so we can reserve an early date.

—With DEEP MAGNETIC PENETRATION A NEW PRODUCTION HOLDING TECHNIQUE

That's right! Power-Grip Holding, with its Deep Magnetic Penetration eliminates the need for complex, expensive, holding fixtures, and grips securely odd shaped pieces otherwise normally difficult to hold.

Applied to milling, turning, shaping, planing, or grinding operations, this *new* holding technique is used for stout, high speed machining cuts. Get the complete story today. Write for a copy of our latest Bulletin, Magnetic Holding Methods.

Send us prints and specifications for estimates on Power-Grip Holding for your Production Jobs

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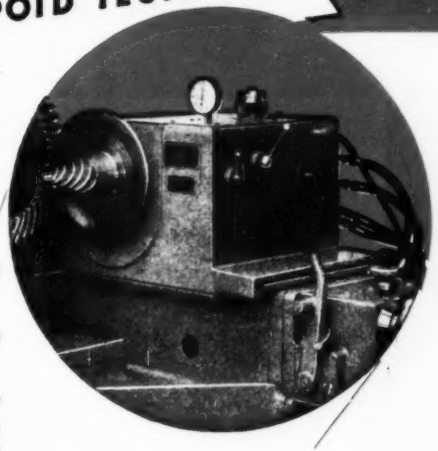
SIMPLIFIED TESTING

WITH THE NEW GLEASON NO. 17A HYPOID TESTER

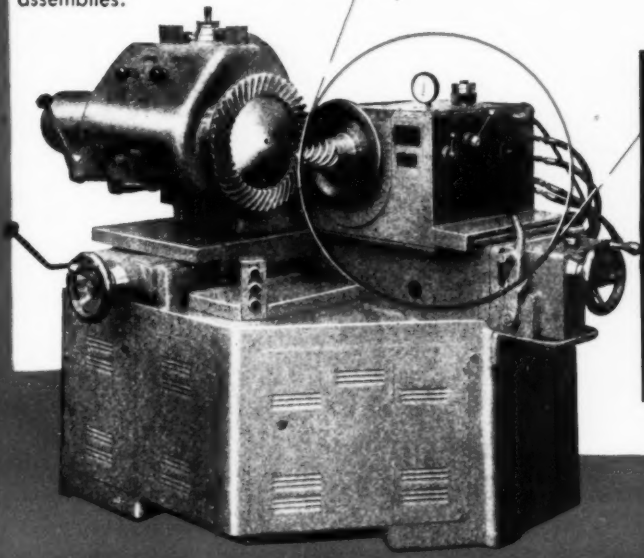
A running test, simulating actual operation of gears in final assembly, is the only positive method of determining how gears will operate in their final mountings.



BEFORE PRODUCTION—to establish the correct setup for the gear cutting machine.

DURING PRODUCTION—to maintain uniform quality of the cut gears.

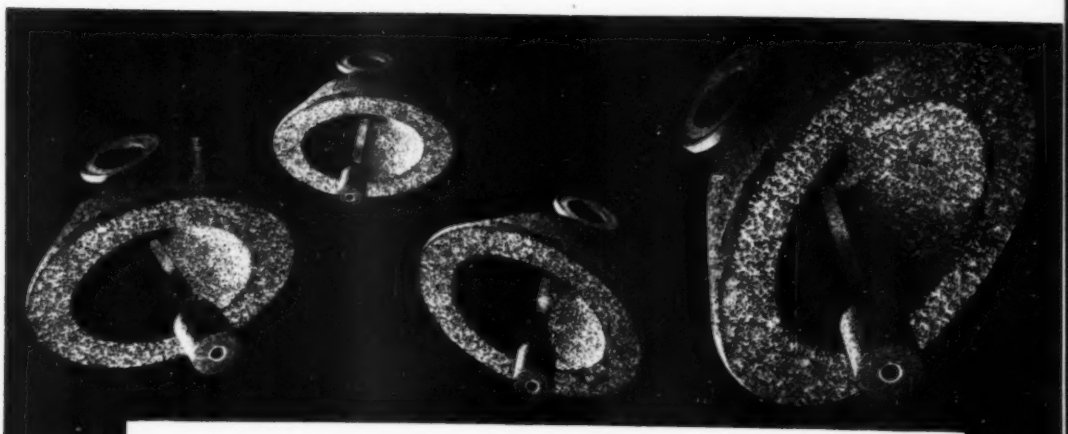
FINAL TEST—to find the best running quality of the gears for assembly . . . eliminating costly fitting or tearing down and rebuilding of assemblies.



Correct mounting may now be read simply and easily from an indicator with the New Gleason No. 17A Tester. Designed with a dial adjustment which once set up, automatically duplicates backlash on each pair of gears, this machine simplifies obtaining the best running position of gears in final assembly.

GLEASON *Works*
1000 University Avenue
Rochester 3, N. Y., U. S. A.

Builders of Bevel Gear Machinery for Over Eighty Years



Now! Peninsular announces custom-tailored vitrified wheels!

Peninsular announces the addition of vitrified bonded wheels to its present line of superior resinoid bonded wheels.

These vitrified wheels offer the same custom-tailored precision as the Peninsular resinoid line. They are available in a variety of sizes and shapes to meet most of your grinding needs. Continued expansion and development of the vitrified line will assure individualized engineering attention for many of your grinding operations.

This news may be the best of the year if you're glum because of high grinding expenses. Peninsular's new vitrified wheels and "tailored-for-the-job" service may be able to help you cut down dressing costs, give you longer wheel life and higher stock removal. *Why not call on Peninsular engineers to plot a new grinding course for you?*

They'll examine everything about your grinding operations—the machinery used, the materials ground, and the finishes required. After a complete study of their findings, Peninsular develops and recommends wheels specifically designed to fill your needs.

Peninsular has brought the good news of lower grinding costs to manufacturers in over fifty diversified fields.

Why not get good grinding news for yourself this year by calling on our Peninsular consultants?

The Peninsular Grinding Wheel Co., 729 Meldrum Ave., Detroit 7. Sales Offices: Chicago, Philadelphia, Buffalo, Cleveland, Pittsburgh, Houston, St. Louis, Cincinnati.

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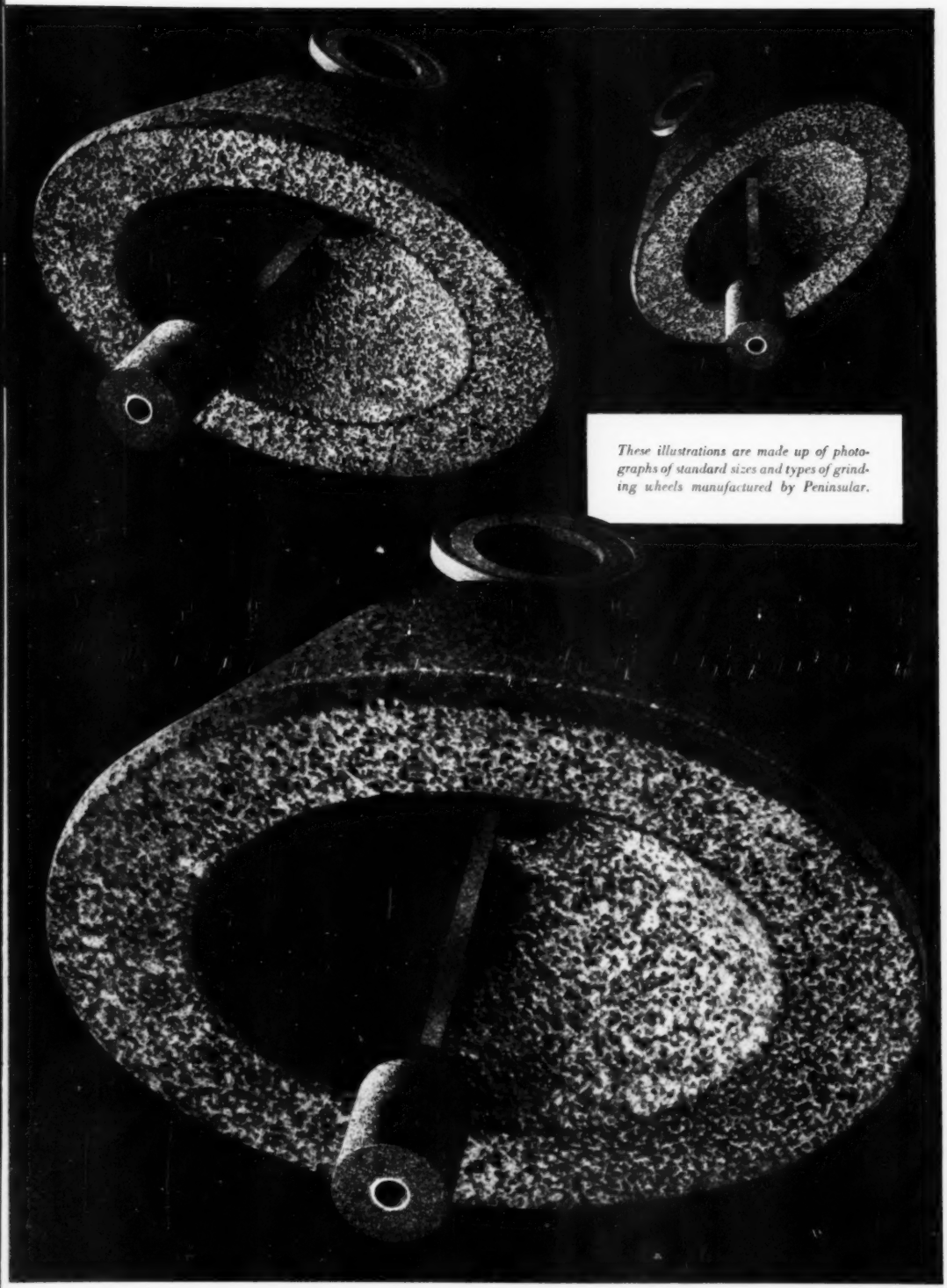
GRINDING WHEELS

SINCE 1889

SPECIALISTS IN RESINOID AND VITRIFIED BONDED WHEELS



These illustrations are made up of photographs of standard sizes and types of grinding wheels manufactured by Peninsular.

DIRECTORY of MANUFACTURERS

Following are the company names and addresses of manufacturers whose products are listed in the tables of specifications of complete motor vehicles, tractors, aircraft, and all types of gasoline and Diesel engines appearing on pages 150 to 171 inclusive.

PASSENGER CARS

For details of their products see pages 122-133.

BUICK Motor Div., General Motors Corp., Flint 2, Mich.
CADILLAC Motor Car Div., General Motors Corp., Detroit 32, Mich.
CHEVROLET Motor Div., General Motors Corp., Detroit 2, Mich.
CHRYSLER Div., Chrysler Corp., Detroit 31, Mich.
CROSLEY Motors, Inc., Cincinnati 14, Ohio.
DE SOTO Div., Chrysler Corp., Detroit 31, Mich.
DODGE Div., Chrysler Corp., Detroit 31, Mich.
FORD Motor Co., Dearborn, Mich.
FRAZER, See Kaiser-Frazer Corp.
HUDSON Motor Car Co., Detroit 14, Mich.
KAISER-FRAZER Corp., Willow Run, Mich.
LINCOLN-MERCURY Div., Ford Motor Co., Detroit 32, Mich.
MERCURY, See Lincoln-Mercury Div., Ford Motor Co.
NASH Motors Div., Nash Kelvinator Corp., Detroit 32, Mich.
OLDSMOBILE Div., General Motors Corp., Lansing 21, Mich.
PACKARD Motor Car Co., Detroit 32, Mich.
PLYMOUTH Division, Chrysler Corp., Detroit 31, Mich.
PONTIAC Motor Div., General Motors Corp., Pontiac, Mich.
STUDEBAKER Corp., South Bend, Ind.
WILLYS-OVERLAND Motors, Inc., Toledo, Ohio.

You GET CORROSION RESISTANCE
Plus FAST ECONOMICAL ASSEMBLY
with these ELCO SCREWS

STAINLESS STEEL
ALUMINUM
BRASS BRONZE

HOLDING POWER

Elco fasteners made of stainless and other non-ferrous materials not only give corrosion resistance, but also holding power under continuous tension, because they are made from carefully analyzed materials, maintained from constant sources.

UNIFORMITY

Elco heads, threads and slots are made consistently alike under a system of rigid production control. This is assurance against defects and costly delays.

FAST ASSEMBLY

Quick, easy-starting points with accurately formed heads, threads and slots, qualify Elco fasteners for mechanical pick-up and driving. Hours of handling time are saved.

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After the assembly job is done, Elco service carries on. Strong hardened threads stay tight and rattle-free longer, permit removal and replacement, without danger of stripping, damaging or reducing the fit.

ELCO Screws

ELCO TOOL AND SCREW CORPORATION
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WOOD SCREWS • MACHINE SCREWS • MACHINE SCREW NUTS • DRIVE SCREWS • CAP SCREWS
LAG SCREWS • SPECIAL SCREWS • TAPPING SCREWS • STOVE BOLTS • PIPE PLUGS

TRUCKS

For details of their products see pages 134-140.

AVAILABLE Truck Co., Chicago 47, Ill.
BIEDERMAN Motors Corp., Cincinnati 14, Ohio.
CHEVROLET Motor Div., General Motors Corp., Detroit 2, Mich.
The CORBITT CO., Henderson, N. C.
CROSLEY Motors, Inc., Cincinnati 25, Ohio.
DODGE Div., Chrysler Corp., Detroit 31, Mich.
DUPLEX Truck Co., Lansing 4, Mich.
FEDERAL Motor Truck Co., Detroit 9, Mich.
FORD Motor Co., Dearborn, Mich.
FOUR WHEEL Drive Auto Co., Clintonville, Wisc.
INTERNATIONAL HARVESTER Co., Chicago 1, Ill.
KENWORTH Motor Truck Corp., Seattle 11, Wash.
LINN Coach & Truck Div., Great American Industries, Oneonta, N. Y.
MARMON-HERRINGTON Co., Indianapolis 7, Ind.
OSHKOSH Motor Truck Inc., Oshkosh, Wisc.
PETERBUILT Motors Co., Oakland, Calif.
REO Motors, Inc., Lansing 20, Mich.
STERLING Motors Co., Inc., Milwaukee 1, Wisc.
STUDEBAKER Corp., South Bend 27, Ind.
TRUCKSTELL, Inc., Cleveland 14, Ohio.
WALTER Motor Truck Co., Ridgewood, L. I., N. Y.
WARD LA FRANCE Truck Corp., Elmira, N. Y.
WILLYS-OVERLAND Motors, Inc., Toledo 1, Ohio.

ROTARY WING AIRCRAFT

For details of their products see page 141.

BELL Aircraft Corp., Buffalo 5, N. Y.
DOMAN-FRASIER Helicopters, Inc., Stratford, Conn.
HELICOPTERS, Inc., Stratford, Conn.
KAMAN Aircraft Corp., Windsor Locks, Conn.
KELLETT Aircraft Corp., Helicopter Div., North Wales, Penna.
McDONNEL Aircraft Corp., St. Louis 3, Mo.
PIASECKI Helicopter Corp., Morton, Penna.
SIKORSKY Aircraft Div., United Aircraft Corp., Bridgeport 1, Conn.
UNITED HELICOPTERS, Inc., Palo Alto, Calif.

AMERICAN COMMERCIAL & PRIVATE AIRCRAFT

For details of their products see pages 142 and 143.

AERONCA Aircraft Corp., Middletown, Ohio.

(*Turn to page 244, please*)

DANLY HIGH PRODUCTION PRESSES

Open New Fields

in the GREAT MIDDLE RANGE of STAMPINGS

REDUCE VIBRATION AND DEFLECTION
. . . AUTOMATIC PRODUCTION AT
INCREASED SPEEDS . . .

● The new modern line of Danly High Production Presses is constructed *heavier* for the rated capacity of the press. The entire frame—the bed, box-type uprights, crown and tie rods—is designed and built to reduce vibration and deflection at *higher operating speeds.*

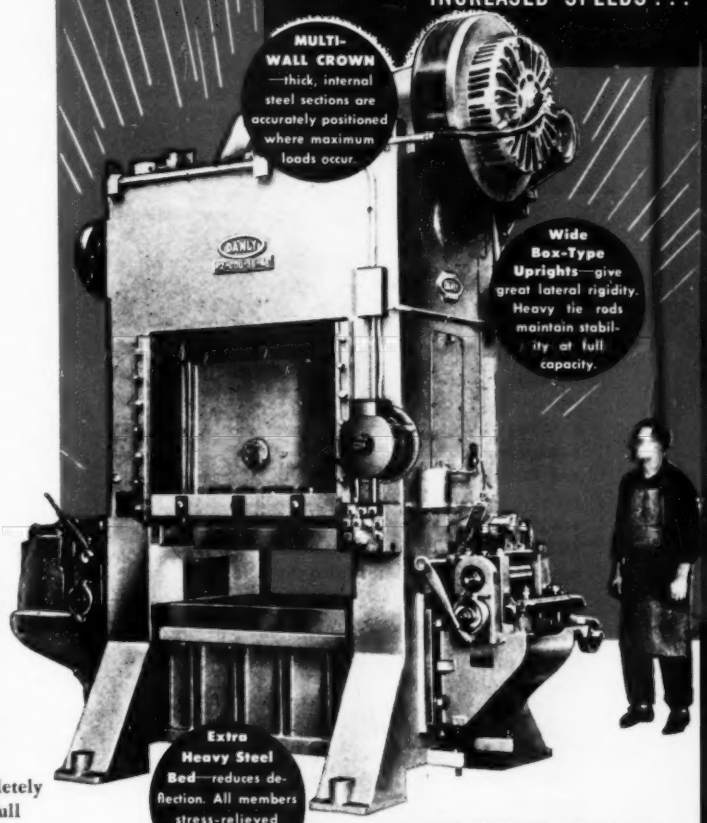
The resulting rigidity insures accurate die closures even under severe off-center loads. Less deflection gives you longer die life and more stampings per grind.

REDUCE UNIT STAMPING COSTS WITH AN AUTOMATIC SETUP

You can now get the full advantage of the use of *heavier gage coil or strip stock in an automatic setup.* Mass, strength, and speed are combined in these Danly presses to increase your production potential in the great middle range of stampings.

Write FOR MORE FACTS TODAY

It'll pay you to learn more about the many outstanding features of these completely new, modern presses. Write today for full details. Find out how they may be applied to your work to increase output and cut costs.


MULTI-WALL CROWN—thick, internal steel sections are accurately positioned where maximum loads occur.
Wide Box-Type Uprights—give great lateral rigidity. Heavy tie rods maintain stability at full capacity.
Extra Heavy Steel Bed—reduces deflection. All members stress-relieved for permanent stability.

Danly High Production Presses are built in a full capacity range between 50 and 800-tons. Straight-Side Units in single, double and triple-action types. Available in sizes up to 3000 tons.

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25 YEARS OF DEPENDABLE SERVICE TO THE STAMPING INDUSTRY

MECHANICAL PRESSES AND PRESS EQUIPMENT

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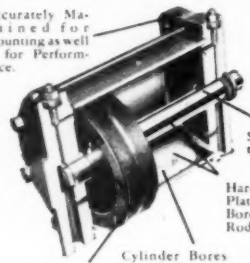
T-J CYLINDER

EJECTS 6-TON STEEL COILS

Saves Labor... Speeds Production... Cuts Costs!

T-J Built to "TAKE IT" on Tough Jobs!


Accurately Machined for Mounting as well as for Performance.
Shouldered Piston Rods.
Hard Chromium Plated Cylinder Bores and Piston Rods.
Self Sealing Packings throughout.
Cylinder Bores Honed Prior to Hard Chromium Plating.

Here's another example of T-J Cylinders doing a job of power movement for industry... *efficiently... accurately... automatically.* This machine is an Aetna Standard Roll Type Coiler, which employs a T-J Air Cylinder to eject steel coils weighing up to 12,000 lbs.! As the strip of steel is completely coiled, kick-out fingers operated by the cylinder raise the coil and push it forward where it rolls on to conveyor.

T-J Air and Hydraulic Cylinders are built for 1001 tough jobs like this, where pushing, pulling or lifting is needed... 100 lb. or 50,000 lb. Available in many standard sizes and styles... both cushioned and non-cushioned types. Backed by 32 years' experience... built for long-life dependability. Write for latest catalogs. The Tomkins-Johnson Co., Jackson, Mich.

FOR POWER MOVEMENT IN ANY DIRECTION

100 LB. or 50,000 LB.

T-J **32 YEARS EXPERIENCE**

TOMKINS-JOHNSON

RIVITORS...AIR AND HYDRAULIC CYLINDERS...CUTTERS...CLINCHORS

(*Continued from page 242*)

BAUMANN Aircraft Corp., Burbank, Calif.
BEECH Aircraft Corp. (Beechcraft), Wichita 1, Kan.
BELLANCA Aircraft Corp., New Castle, Del.
BOEING Aircraft Co., Seattle 14, Wash.
CALL Aircraft Co., Afton, Wyo.
CESSNA Aircraft Co., Wichita 15, Kan.
CONSOLIDATED VULTEE Aircraft Corp. (Convair), San Diego 12, Calif.
CURTISS-WRIGHT Corp., Airplane Div., Columbus 16, Ohio.
DOUGLASS Aircraft Co., Inc., Santa Monica, Calif.
FAIRCHILD Personal Planes Div., Fairchild Engine & Airplane Corp., Winfield, Kan.
FUNK Aircraft Co., Coffeyville, Kan.
GRUMMAN Aircraft Engineering Corp., Bethpage, L. I., N. Y.
LOCKHEED Aircraft Corp., Burbank, Calif.
LUSCOMBE Airplane Corp., Dallas, Tex.
The GLENN L. MARTIN Co., Baltimore 3, Md.
MONSTEAD-VINCENT Aeronautical Inc., New Orleans, La.
NORTHROP Aircraft, Inc., Hawthorne, Calif.
PIPER Aircraft Corp., Lock Haven, Penna.
ROSS Aircraft Corp., New York 17, N. Y.
RYAN Aeronautical Co., San Diego, Calif.
SANDERS Aviation Inc. (Ercoupe), Riverdale, Md.
SENTINEL Aircraft, Inc., Ann Arbor, Mich.
STINSON DIV., Consolidated Vultee Aircraft Corp., Wayne, Mich.
TEXAS Engineering & Mfg. Co., Inc. (Temco), Dallas 2, Tex.
THORP Aircraft Co., Pacoima, Calif.

AMERICAN BUS CHASSIS

For details of their products see pages 144 and 145.

ACF-BRILL Motors Co., Philadelphia 42, Penna.
BEAVER Metropolitan Coaches, Beaver Falls, Penna.
C. D. BECK & Co., Sidney, Ohio.
FITZJOHN Coach Co., Muskegon, Mich.
FLEXIBLE Co., Loudonville, Ohio.
General American AEROCOACH, Chicago 90, Ill.
GMC TRUCK & Coach Div., General Motors Corp., Pontiac 11, Mich.
KALAMAZOO Coaches, Inc. (Kalamazoo & Pony Coaches), Kalamazoo 11, Mich.
MACK Manufacturing Corp., New York 1, N. Y.
REO Motors, Inc., Lansing 20, Mich.
SOUTHERN COACH Mfg. Co., Evergreen, Ala.
TRANSIT BUSES, Inc., Detroit 27, Mich.
TWIN COACH Co., Kent, Ohio.
WHITE Motor Co., Cleveland 1, Ohio.

AMERICAN TRACTORS

For details of their products see pages 146 to 149.

ALLIS-CHALMERS Mfg. Co., Milwaukee 1, Wisc.
B. F. AVERY & Sons Co., Louisville, Ky.
J. I. CASE Co., Racine, Wisc.
CATERPILLAR TRACTOR CO., Peoria 8, Ill.
JOHN DEERE Waterloo Tractor Works, Deere Mfg. Co., Waterloo, Iowa.
FATE-ROOT-HEATH Co. (Silver King), Plymouth, Ohio.
HARRY FERGUSON, Inc., Detroit 11, Mich.
FORD Motor Co., Dearborn, Mich.
FRAZER Farm Equipment Corp., York, Penna.
FRIDAY TRACTOR Co., Hartford, Mich.
GIBSON Manufacturing Corp., Longmont, Colo.
INTERNATIONAL HARVESTER Co., Chicago 1, Ill.

(*Turn to page 248, Please*)

Mammoth Redwood trees—centuries old.

Do you want AGE RESISTANCE?

Hycar has it plus!

...AND THESE 8 OTHER ADVANTAGES!

1. Abrasion Resistance—50% greater than crude rubber.
2. Extreme Oil Resistance–insuring dimensional stability of parts.
3. High Temperature Resistance—up to 250° F. dry heat; up to 300° F. hot oil.
4. Minimum Cold Flow—even at elevated temperatures.
5. Low Temperature Flexibility—down to –65° F.
6. Light Weight—15% to 25% lighter than other American rubber.
7. Hardness Range—compounds can be varied from extremely soft to bone hard.
8. Non-adherent to Metal—compounds will not adhere to metals even after prolonged contact under pressure. (Metal adhesions can be readily obtained when desired.)

For more information, write or ask your supplier to write B. F. Goodrich Chemical Company, Dept. HC-3, Rose Building, Cleveland 15, Ohio.

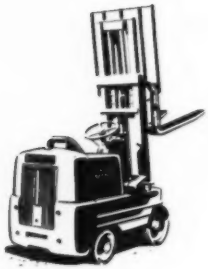
Hycar
Reg. U.S. Pat. Off.
American Rubber

B. F. Goodrich Chemical Company

A DIVISION OF THE B. F. GOODRICH COMPANY

GEON polyvinyl materials • HYCAR American rubber • GOOD-RITE chemicals and plasticizers

For POWER,



There's a Great New Ford Industrial Engine that's RIGHT for Your Job

Ford Power is RIGHT 3 Important Ways

1 **RIGHT POWER**—Your choice of five rugged workhorses in the complete Ford Industrial Engine line. There's one just right for your job.

2 **RIGHT FEATURES**—You're always right up to date when you specify Ford Power. Every model has all the latest benefits of Ford's famed progressive engineering.

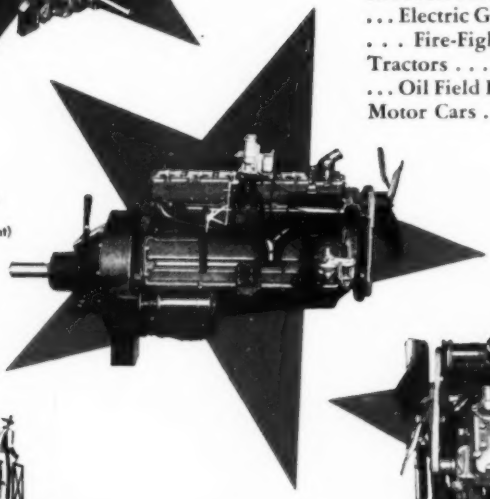
3 **RIGHT SERVICE**—Ford Dealers are everywhere, with the facilities and experience for keeping Ford Industrial Engines right on the job—for longer life, greater service, lower costs.

Ford 120 Four Cylinder Industrial Engine (120 cu. in. displacement)

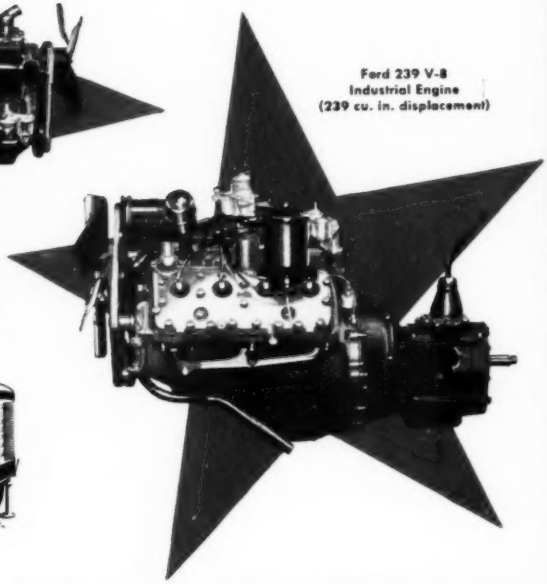
Ford Industrial Engines Power—

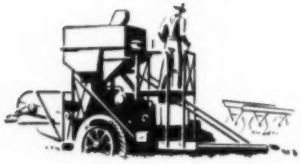
Agricultural Machinery . . . Orchard Equipment . . . Air Compressors . . . Road and Construction Machinery . . . Derricks and Hoists . . . Electric Generating Plants . . . Arc Welders . . . Fire-Fighting Equipment . . . Industrial Tractors . . . Lumber and Sawmill Equipment . . . Oil Field Equipment . . . Pumps . . . Railway Motor Cars . . . and many other applications.

Ford 226 Six Cylinder Industrial Engine (226 cu. in. displacement)



Ford 239 V-8 Industrial Engine (239 cu. in. displacement)





YOUR JOB IS WELL-POWERED

Pick FORD

Only Ford Industrial Engines Have All These Features

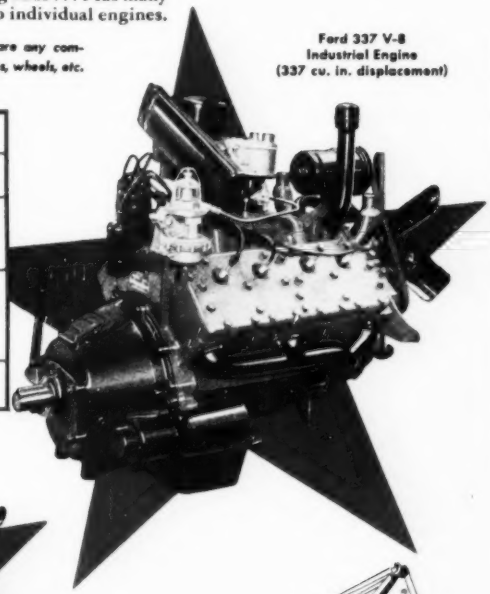
Made throughout to Ford famed hi-precision manufacturing standards . . . Fully counterbalanced crankshafts . . . Large, precision, replaceable main and connecting rod bearings . . . Long life, high-chrome nickel alloy valves . . . Moly-chrome alloy steel valve seat inserts . . . Shot-blasted, rust-proofed valve springs . . . Full-floating, tubular piston pins . . . Full pressure lubrication to all bearings . . . Deep oil pans with clean-out plates . . . Direct, gear-driven camshafts with aluminum timing gear . . . Removable cartridge type oil filters . . . Hi-capacity, full-jacketed, thermostatically controlled cooling . . . Balanced carburetion . . . Full-automatic distributors . . . Drop-forged connecting rods . . . Plus many other advancements applying to individual engines.

Also available to manufacturers, through the Industrial Engine Department, are any component Genuine Ford Parts including front and rear axles, transmissions, brakes, wheels, etc.

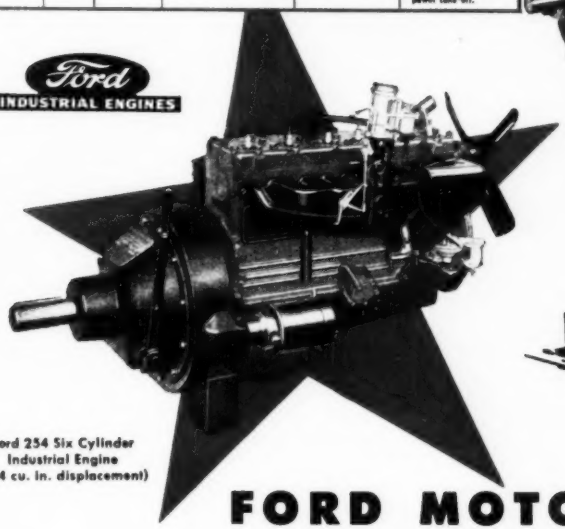
Specifications of Ford Industrial Engines

Model	Cylinders	Bore and Stroke	Displ. cu. in.	Dyn. B.H.P.	Max. Torque	Auxiliary Equipment Available
120	4	3⅛x3¾	120	36@2400	84#' @1600	Clutch; 3 and 4 speed transmissions; SAE #5 housing and power take-off. Also complete power unit.
226	6	3.3x4.4	226	80@2400	182#' @1200	Clutch; 3, 4 and 5 speed transmissions; SAE #3 and #4 housings; power take-off.
239	V-8	3⅛x3¾	239	85@2400	187#' @1600	
254	6	3.5x4.4	254	95@2400	212#' @1200	
337	V-8	3½x4⅜	337	117@2400	257#' @1600	Clutch; 5 speed transmission; direct drive power take-off.

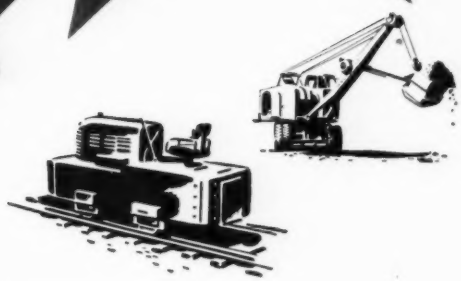
Ford 337 V-8 Industrial Engine (337 cu. in. displacement)



Ford INDUSTRIAL ENGINES



Ford 254 Six Cylinder Industrial Engine (254 cu. in. displacement)



FORD MOTOR COMPANY

INDUSTRIAL AND MARINE ENGINE SALES DEPARTMENT • DEARBORN, MICHIGAN

WHEN IT'S FORD-POWERED

(Continued from page 244)

MASSEY-HARRIS Co., Racine, Wisc.
MINNEAPOLIS-MOLINE Power Implement co. (M-M), Minneapolis, Minn.
NATIONAL Iron Works (Lincoln), San Diego, Calif.
The OLIVER Corp., Charles City, Iowa.
The OLIVER Corp., Industrial Div. (Cle-Trac), Cleveland 17, Ohio.
U. S. TRACTOR Corp., Warren, Ohio.

AMERICAN GASOLINE ENGINES

For details of their products see pages 159 to 159.

AIRCOOLED Motors, Inc. (Franklin), Syracuse, N. Y.
ALLIS-CHALMERS Mfg. Co., Milwaukee 1, Wisc.
The AUTOCAR Co., Ardmore, Penna.
BRENNAN Motor Mfg. Co., Syracuse 2, N. Y.
The BUDA Co., Harvey, Ill.
BUFFALO Gasoline Motor Co., Buffalo 13, N. Y.
CHEVROLET-Central Office Div., General Motors Corp., Detroit 2, Mich.
CHRIS-CRAFT Corp., Algonac, Mich.
CHRYSLER Corp., Marine Engine Div., Detroit 31, Mich.
CLIMAX Engineering Co., Clinton, Iowa.
CONTINENTAL Motors Corp., Muskegon 82, Mich.
DODGE Division, Chrysler Corp., Detroit 31, Mich.
FAGEOL Products Co., Kent, Ohio.
FORD Motor Co., Dearborn, Mich.
GMC TRUCK & Coach Div., General Motors Corp., Pontiac 11, Mich.
GRAY MARINE Motor Co., Detroit 7, Mich.
HALL-SCOTT Motor Div., ACF-Brill Motors Co., Berkeley 2, Calif.
HERCULES Motors Corp., Canton 2, Ohio.
INTERNATIONAL HARVESTER Co., Chicago 1, Ill.
KERMATH Manufacturing Co., Detroit 8, Mich.
The LATHROP Engine Co., Mystic, Conn.
LE ROI Company, Milwaukee 14, Wisc.
MACK Manufacturing Corp., New York 1, N. Y.
MINNEAPOLIS-MOLINE Power Implement Co., Minneapolis 1, Minn.
NORDBERG Manufacturing Co., Milwaukee 7, Wisc.
The OLIVER Corp., Charles City, Iowa.
PACKARD Motor Car Co., Marine Div., Detroit 32, Mich.
RED WING Motor Co. (Thoroubred), Red Wing, Minn.
REO Motors, Inc., Lansing 20, Mich.
SCRIPPS Motor Co., Detroit 8, Mich.
STERLING Engine Co., Buffalo 13, N. Y.
TWIN COACH Co., Kent, Ohio.
UNIVERSAL Motor Co., Oshkosh, Wisc.
The VIMALERT Co., Ltd., Jersey City 5, N. J.
WAUKESHA Motor Co., Waukesha, Wisc.
The WHITE Motor Co., Cleveland 1, Ohio.
WILLYS-OVERLAND Motors, Inc., Toledo 1, Ohio.
WISCONSIN Motor Corp., Milwaukee 14, Wisc.

AUTOMOTIVE DIESEL ENGINES

For details of their products see pages 160 to 165.

ATLAS IMPERIAL Diesel Engine Co., Oakland 6, Calif.
The BUDA Company, Harvey, Ill.
CATERPILLAR Tractor Co., Peoria 8, Ill.
CLIMAX Engineering Co., Clinton, Iowa.
CONTINENTAL Motors Corp., Muskegon, Mich.
CUMMINS Engine Co., Inc., Columbus, Ind.
DETROIT DIESEL Engine Div., General Motors Corp., Detroit 28, Mich.
FAIRBANKS, MORSE & Co., Chicago 5, Ill.
GRAY MARINE Motor Co., Detroit 7, Mich.
HALLETT Manufacturing Co., Inglewood, Calif.
HERCULES Motors Corp., Canton 2, Ohio.
HILL Diesel Engine Corp., Lansing 3, Mich.
INTERNATIONAL HARVESTER Co., Chicago 1, Ill.
KERMATH Manufacturing Co., Detroit 8, Mich.
LISTER-BLACKSTONE, Inc., New York 17, N. Y.
MACK-INTERNATIONAL Motor Truck Corp., New York 1, N. Y.
MURPHY Diesel Co., Milwaukee 14, Wisc.
RED WING Motor Co., Red Wing, Minn.
SCRIPPS Motor Co., Detroit 8, Mich.
R. H. SHEPPARD Co., Inc., Hanover, Penna.
STERLING Engine Co., Buffalo 13, N. Y.
WAUKESHA Motor Co., Waukesha, Wisc.

BRITISH COMMERCIAL AND PRIVATE AIRCRAFT

For details of their products see pages 164 and 165.

AIRSPEED, Ltd., Christchurch, Hampshire, Eng.
ARMSTRONG WHITWORTH Aircraft, Sir W. G., Ltd., Baginton, nr. Coventry, Eng.
AUSTER Aircraft, Ltd., Rearsby, Leicester, Eng.
The CHRISLEA Aircraft Co., Ltd., Clyst Honiton, Devon, Eng.
The DE HAVILLAND Aircraft Co., Ltd., Hatfield, Hertfordshire, Eng.
HANDLEY PAGE, Ltd., Cricklewood, London, N.W.2, Eng.

(Turn to page 287, please)

BRIGHT ANNEALING AND NORMALIZING STEEL STRIP *Continuously*

● EF continuous annealing and normalizing furnaces shorten the heat treating cycle, reduce the amount of material in process, and frequently cost less than batch type equipment of equivalent capacity. They subject the entire length, and width, of the strip to exactly the same time and temperature treatment, producing extreme uniformity of grain size, yield point, and completeness of recrystallization:—all definite advantages for deep drawing.

The low cost EF atmosphere prevents scaling and eliminates pickling . . . and the design and mounting of the rolls avoids the need of "rider strips," and danger of scratching.

EF furnaces are built for processing hot or cold rolled—high, medium, or low carbon—or stainless strip. Capacities from 1,000 to 28,000 lbs. or more per hour—single or multiple strands up to 54", or wider. More complete details and treated samples furnished promptly.

EF
GAS-FIRED
OIL-FIRED
and ELECTRIC
FURNACES
for

- AGING
- ANNEALING
- BRAZING
- CARBON RESTORATION
- CARBURIZING
- CERAMIC DECORATING
- DRAWING
- HARDENING
- HOMOGENIZING
- MALLEABLIZING
- NORMALIZING
- NITRIDING
- SINTERING
- SOLUTION TREATING
- SPECIAL ATMOSPHERE TREATMENTS

EF
THE ELECTRIC FURNACE CO.
GAS FIRED OIL FIRED AND ELECTRIC FURNACES FOR ANY PROCESS, PRODUCT OR PRODUCTION
Salem - Ohio

This Railroad Car WINDOW SILL Idea Can Go Places!

❶ At a reduction in cost, The Budd Company has adopted BAKELITE Phenolic Plastic for the long-lasting window sills of its new streamlined passenger cars. The sills are molded in a single piece that requires no machining or finishing. The design purposely allows for a slight lengthwise bend, which straightens out when the ends are clamped in place, and gives each sill a permanent tension fit in its window frame. The sills are hard, smooth, lustrous and are highly resistant to water, temperature changes, and cleaning compounds. The molder is Northern Industrial Chemical Company.

Opportunities for you

in the expanding family of Plastics!

BAKELITE NEWS

NO. 5

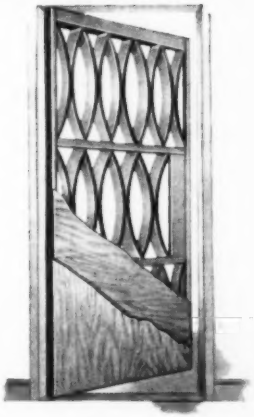
NOTES FROM BAKELITE CORPORATION ON BETTER, FASTER, LOWER COST PRODUCTION WITH "BAKELITE" PLASTICS

The SM-O-O-T-H-Y That Helps Safeguard Clothes!

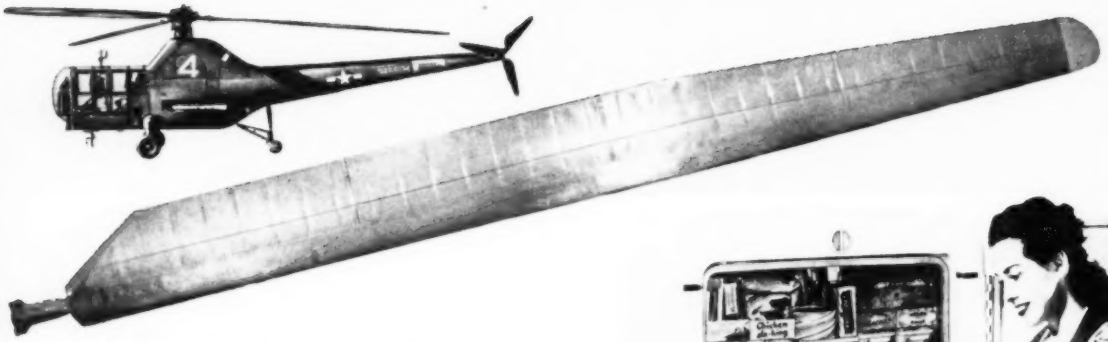
❷ Agitators in the new Maytag Washers are made from a special type of BAKELITE Phenolic Plastic, bringing real benefits to manufacturer and housewife, alike. They're rapidly and inexpensively molded in a single operation to a degree of surface smoothness that is definitely kinder to fabrics. Light in weight, they are strong, attractively colored, and resistant to soap, detergents, hot water, and dirt. They're molded by the Plastics Division of General American Transportation Corporation, and by Chicago Molded Products Corporation.

What Can This DOOR Tell You About ADHESIVES?

❸ Bonded throughout with BAKELITE Urea Resin Glue BCU-12, this ingeniously designed flush-panel door made by Para Corporation is strong, light, good-looking and economically produced. It's another example of the growing trend to BCU-12 in the furniture, plywood and woodworking industries. For BCU-12 is highly extendible. It can be used for cold- or hot-pressing, curing rapidly at room temperature or up to 265 deg. F. A standardized product, it is suited to well-established gluing techniques.



PLEASE TURN THE PAGE



LAMINATED PLASTICS Set This Idea Soaring!

4 Helicopter blades built by Goodyear Aircraft Corporation now have an ingenious new covering on the aft two-thirds of their surfaces. It consists of "Formica" laminated plastics made with BAKELITE Phenolic Resin, pressure bonded between thin sheets of stainless steel. The laminate not only provides a high degree of weather resistance, but also adds stiffness, greater weight-lifting ability, and maximum resistance to distortion under load.

Does Your Product Call for a "COLD-WEATHER" PLASTIC?

5 In short, does it need rigidity and good mechanical strength at the low temperatures found in refrigerators? BAKELITE Styrene Plastics furnish these qualities in the baffle assembly that separates the freezer compartment from the storage section of Kelvinator's new "Moistmaster" Refrigerators. Moreover, these "cold-weather" plastics are light in weight, dimensionally stable, resistant to moisture and to food chemicals—and they save money! The baffle shown is molded by the Plastics Division of General American Transportation Corporation.

Bakelite

TRADE-MARK

PLASTICS

BAKELITE CORPORATION

BAKELITE CORPORATION
Unit of Union Carbide and Carbon Corporation UCC
30 East 42nd Street, New York 17, N.Y.

Design Changes Are Easy with Versatile, Adaptable Plastics!

Check coupon below for information on specific subjects illustrated. For general information write for copy of Booklet G-8, "A Simplified Guide to BAKELITE and VINYLITE Plastics."

BAKELITE CORPORATION, Department 9
30 East 42nd Street, New York 17, N.Y.

Please send information on subjects checked below:

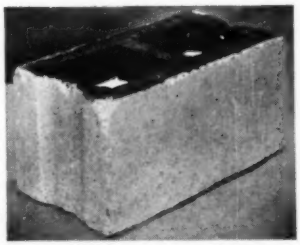
- ☐ 1. General-Purpose Phenolic Plastics
- ☐ 2. Impact-and-Chemical Resistant Phenolic Plastics
- ☐ 3. Urea Resin Glues
- ☐ 4. Phenolic Laminating Plastics
- ☐ 5. Molded Styrene Plastics
- ☐ 6. Polystyrene Emulsions

Your Name ..... Title .....

Your Company .....

Address ..... City ..... Zone ..... State .....

This Cement Block May Change Your Ideas About COATINGS

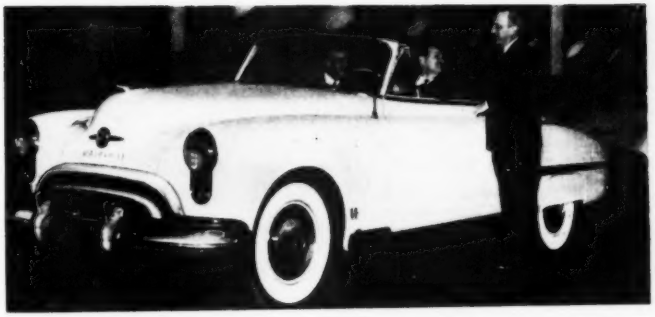


6 There's something new in coatings that product designers, production managers, and maintenance men should investigate . . . **BAKELITE Polystyrene Emulsions.** The cement block illustrated tells the story. A test was devised in which only the *outside* surfaces of the block were given a single coat of Polystyrene emulsion paint. Then the block was filled with water for several months. The water traveled through the interior structure of the block, yet not a drop seeped through the coating . . . neither has the coating blistered nor peeled. These new BAKELITE Polystyrene Emulsions can be used straight or employed as a fortifying agent in standard types of water-thinned emulsion paints to improve gloss and washability. The exceptional "hiding power" of the new emulsions makes them serviceable for application on a variety of porous surfaces such as plaster, masonry, paper, cloth, wood and leather.

General News

(*Continued from page 69*)

TO SET THE PACE



This 1949 Series 88 Oldsmobile convertible coupe which will pace this year's 500-mile Indianapolis race is shown rolling off the assembly line at the GM Oldsmobile Div. plant in Lansing, Mich. Inspecting the new model are Wilbur Shaw, (at the wheel) president and manager of the Indianapolis Motor Speedway; S. E. Skinner (at Mr. Shaw's right) general manager of the Oldsmobile Div. and GM vice president; and J. F. Wolfram (standing outside the car) chief engineer at Oldsmobile. This model is powered by the new 153-hp Rocket engine.

Federal Reserve Eases Credit Buying

The Federal Reserve Board's relaxation of consumer credit controls on March 7 is a "routine adjustment" and may be followed by further easing of consumer buying restrictions. The Board of Governors of the Federal Reserve System made this clear on March 2 when it extended the credit maturity period to 21 months, and reduced the amount required for down payments on all controlled commodities except automobiles from 20 per cent to 15 per cent. The Board says that it will continue to use the credit-control authority granted it last year by the 80th Congress "flexibly", and stated that it "would be ready at all times to tighten or relax the terms in accordance with the objectives of the authority and with a view to sound credit conditions."

Prior to March 7, the maximum maturity on purchases under $1000 was 15 months, while the maximum maturity on credits above $1000 was 18 months. The change places the maximum maturity at 21 months in all cases. The change in the down payment requirement of from 20 per cent to 15 per cent applies to such articles as cooking stoves, dishwashers, ironers, refrigerators, washing machines, combinations of the above items, air conditioners (room units), radio and television sets, phonographs, sewing machines, suction cleaners' furniture, and soft-surface floor coverings. The required down payment for automobiles remains at 33 1/3 per cent.

Studebaker Body Chief Retires After 45 Years

George M. Fisher, who has been superintendent of Studebaker body division for 25 years and an employee of the company for 45 years, has retired. He is succeeded by C. H. Smith, who has been assistant superintendent of the body division for the last four years.

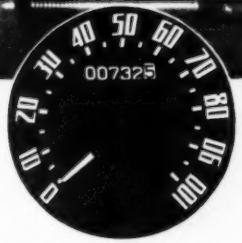
(*Turn to page 252, please*)

FLUORESCENT DIALS!

ATTRACTIVE • EASY TO READ BY DAY

GLARE-FREE →

SAFER FOR NIGHT DRIVING!



STUDEBAKER'S 1949 dashboard is "visibility engineered" with *Lawter's Fluorescent Paint* . . . illuminated by black light for maximum readability and glare-free driving. Several great automotive names are using Lawter's Fluorescent Paint on their dials . . . for good looks by day and maintaining dark adaption of operator's eyes at night for easier observation and safer driving.

Lawter's Fluorescent Paints can be silk screened on dials, and sprayed, brushed or dipped on pointers and indicators. Absolutely safe, they contain no radium or radio active salts.

Lawter's specially equipped laboratory, skilled chemists and sales engineers are at your immediate service. Send for free copy of our booklet, "Luminescence by Lawter", and sample swatches of *Lawter's Fluorescent Paint.*

WRITE DEPT. B-3

LAWTER CHEMICALS, INC.

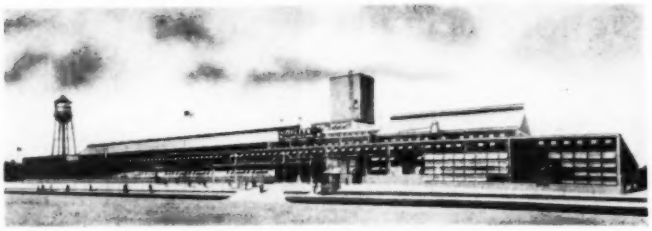
3550 Touhy Avenue • Chicago 45, Illinois

General News

(*Continued from page 251*)

Polk Says Average Age Of Cars Is 9.3 Years

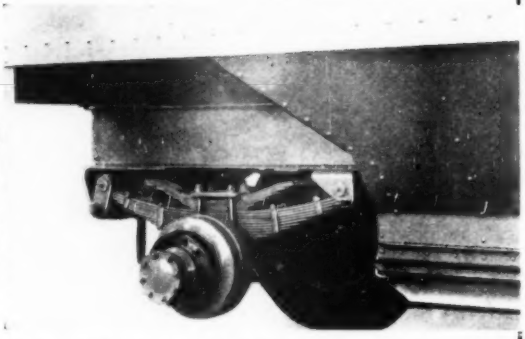
Figures just released by R. L. Polk & Co., automotive industry statisticians, indicate that the average age of passenger cars on the road today is higher than had been assumed. According to the Polk figures, the average age of cars at the end of last year was 9.3 years, with trucks in a little better position with an average of 8.0 years. The average mileage on cars used today is estimated at 6000 miles, predicated on an average car use of 7000 miles a year. The report says further that less than one-third, or 11,121,000, of the total new car and truck registrations in the country are postwar models. Consequently, with two-thirds of the country still driving prewar models the outlook for service operations to continue at a profitable level are good. Also, the prospects for new car sales as indicated by replacement needs are excellent.



Recently completed in Detroit, this new Chrysler-Amplex plant provides greatly expanded manufacturing facilities and contains the latest equipment for larger production of Oilite heavy-duty oil cushion bearings, finished machine parts, filters, friction units, and bar stock. Production includes both ferrous and non-ferrous materials and alloys.

for BIG ONES

These powerful Tuthill units carry the load for huge A-W strip mine semi-trailers used to haul coal.



LIKE THIS 20-TON TRAILCAR
BUILT BY AUSTIN-WESTERN CO.

and for little ones

LIKE THIS POPULAR MODEL
CROSLEY CAR

TUTHILL Alloy Steel SPRINGS

A complete line of leaf springs to meet most requirements. Specially built springs upon request.

WRITE for complete details on Tuthill Springs today.

Quality Spring Makers Since 1880

TUTHILL SPRING CO.

760 WEST POLK STREET • CHICAGO 7, ILLINOIS

Ford International Names Two Vice Presidents

Graeme K. Howard, president, Ford International Co., has announced the appointment of Norbert A. Bogdan as vice president and treasurer, and A. K. Mills as vice president—public and employe relations of Ford International which will have six vice presidents. The appointment of Mr. Bogdan and Mr. Mills followed that of Walter Appel, recently announced as vice president—engineering.

Army Delays Aircooled Engine Use in Trucks

Army Ordnance is not planning to use the aircooled engines developed in cooperation with Continental Motors in vehicles under procurement now. It is understood that the cost of the engine is still very high, and that the military services hope that private industry will adopt the engines so that cost can be reduced through manufacturing experience and greater volume production.

Merge Battery Corp. of America With Scranton Battery

The activities of the Battery Corp. of America are being merged with those of the Scranton Battery Corp., with factory and general offices now located in Archbald, Pa., according to J. M. Saunders, Scranton sales manager. The Scranton Battery plant is newly constructed, and has 50,000 sq ft of working space.

(*Turn to page 254, please*)

Fleetness

Swift, silent, enduring service . . . best exemplified in the light and medium truck and passenger car field by the Spicer Axle.

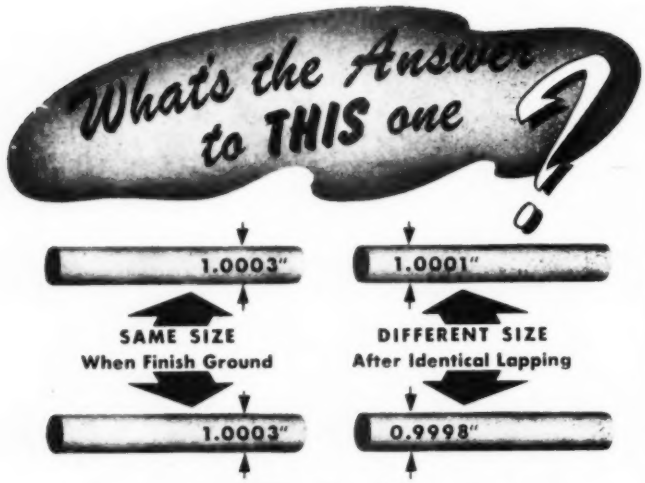
45 YEARS OF **Spicer** SERVICE

SPICER MANUFACTURING

Division of Dana Corporation

TOLEDO 1, OHIO

TRANSMISSIONS • PASSENGER CAR AXLES • CLUTCHES
PARISH FRAMES • STAMPINGS • TORQUE CONVERTERS
UNIVERSAL JOINTS • SPICER "BROWN-LIPE" GEAR BOXES • RAILWAY GENERATOR DRIVES



The Profilometer
CAN TELL YOU!

HERE'S what happened — and what may be happening in **your own** production department:

The two parts shown above at left were both finish-ground to 1.0003" The upper part, however, had a surface roughness of 10 microinches, while the lower part — identical in appearance and "feel" — had a 20-microinch finish. Thus the latter part, with deeper "hills and valleys", had less metal to be removed per unit of thickness, and was undersize after lapping.

Obviously, it's entirely a matter of ***initial surface roughness.***

This typical production trouble is ***completely avoided***—and so are many others—***by specifying the surface roughness*** required after certain operations, then ***checking at the machine*** with the Profilometer to meet the specification. Where an attempt is made instead to control the surface by specifying the ***operation***—i.e., the machine, wheel or tool, speed, feed, etc.—experience shows that between identical set-ups on two or more machines, and from hour to hour on any **one** machine, roughness varies from 200 to 400%. These variations can prove to be very costly.

The direct-reading Profilometer eliminates all guesswork — tells you **exactly** the surface roughness you're getting, in definite microinch units. It can be used on practically any surface that can be produced by machining, grinding or finishing operations; and the above example is only **one** of its cost-saving applications. ***Write for informative literature.***

Profilometer is a registered trade name.

A SURFACE CONTROL INSTRUMENT BY

PHYSICISTS RESEARCH COMPANY

ANN ARBOR • MICHIGAN

General News

(*Continued from page 252*)

Goodrich Reports Record Sales for 1948

The B. F. Goodrich Co. reported the highest dollar sales volume of any year in its history in a statement of the company's 1948 business. Net sales totaled $419,798,703 compared with $410,180,839 in 1947. Net income amounted to $23,740,705 for 1948, while the corresponding net income for 1947 was $23,231,063.

The report for 1948 highlighted Goodrich's plant and product activities. B. F. Goodrich Chemical Co. has begun conversion of processing equipment to increase capacity for the production of "cold rubber" in the plant operated by the company for the government near Port Neches, Tex. During 1948 the company began the manufacture and sale of passenger car tires with treads made of the new "cold rubber." Goodrich's puncture sealing tubeless tires will be marketed nationally as production increases. The construction of a new general chemicals manufacturing plant at Avon Lake, O., is underway, and is scheduled to begin operations in the second quarter of 1949. New facilities for the manufacture of large-sized industrial rubber belting are under construction in Akron, O., and an addition to the company's Tuscaloosa, Ala., plant providing equipment for the lining of tanks has been completed. The company's new Research Center is now in full operation.

U. S. Vehicle Output in January Over 430,000 Units

The automobile industry got off to a good production start in January—the best for any year since the end of the war according to the Automobile Manufacturers Association. In reporting recorded U. S. factory sales of 431,284 motor vehicles in January, the AMA stated that despite model changeovers by several manufacturers, January 1949 production topped January 1948 by over six per cent. Output in January included 326,019 passenger cars; 104,607 trucks; and 658 motor coaches.

New American Standard for Unified Screw Threads

Putting into effect the Unified Screw Thread System agreed upon by Great Britian, Canada, and the U. S. last November, the American Standards Association recently gave its final approval to a new American Standard: Unified and American Screw Threads for Bolts, Nuts, and Other Threaded Parts, Bl. 1-1949.

(*Turn to page 256, please*)

PIPE LINE TO TREASURE

Seeking profits through a pipe driven deep into the earth is an investment which sometimes pays off in spectacular fashion. Too often, unfortunately, the investment brings nothing but a "dry hole."

A Clearing press is a pipeline to profits, too—far more certain, if less spectacular, than drilling for oil. Definite reductions in manufacturing costs are achieved by faster output, fewer rejects, longer die life. Let us tell you about the Clearing features of design and construction that account for these accomplishments.

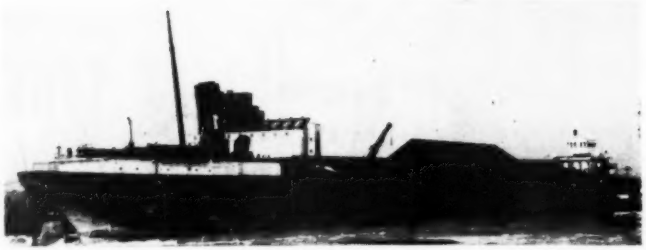
CLEARING MACHINE CORPORATION
6499 West 65th Street · Chicago 38, Illinois

CLEARING PRESSES

THE WAY TO EFFICIENT MASS PRODUCTION

General News

(*Continued from page 254*)



A new flight deck, costing $75,000, has been constructed atop the Str. George H. Ingalls in Buffalo harbor to increase her carrying capacity to 500 or more automobiles. The ship is now said to be the largest automobile carrier on the Great Lakes.

Austin Shelves Canadian Plant Project

The Austin Motor Co., Ltd., will "go slow" and practically cease the installation of plant and equipment in Hamilton, Ont., Canada, at the present time, according to a recent announcement. Duncan Brown, chief engineer for the company, issued a lengthy statement on the authority of L. P. Lord, chairman and managing director of the Austin Motor Co., Ltd., Birmingham, England. Two adverse factors affecting the company's decision to shelve the project for now were the continued need for dollar earnings in Britain, and excise and sales taxes. Mr. Brown said that building and service renovations had been virtually completed, so that the plant would be ready for the opening up at any time.

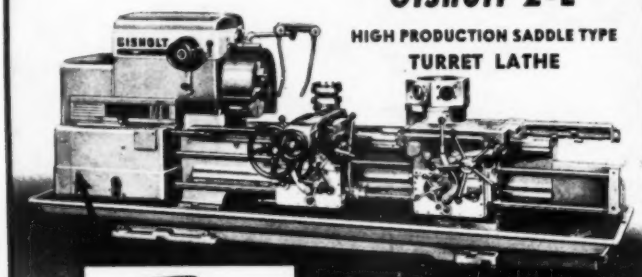
"The Austin Co. has always been very interested in the Canadian market," Mr. Brown continued. "We have faith in the future of Canada. We believe that unlimited expansion lies in the future. We make this announcement with the deepest possible regret, and we look forward to the day when conditions are such that we can either reopen the Hamilton plant or establish a new plant elsewhere in your country." Mr. Brown stated that the company would have been worse off, from an excise and sales tax standpoint, by manufacturing in Canada than by importing complete finished vehicles from England.

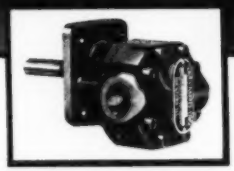
John S. BARNES

Constant-flo ROTARY GEAR PUMPS

Gisholt 2-L

HIGH PRODUCTION SADDLE TYPE TURRET LATHE





Left, Type 7100-A-8 Barnes Constant-flo Pump which is mounted inside the drive housing of the Gisholt 2-L Turret Lathe shown above. No bigger than a man's fist, it packs a terrific power punch.

BARNES PUMP POWERS HYDRAULIC SPEED SELECTOR AND HYDRAULIC COLLET CHUCK AND BAR FEED

The Barnes Constant-flo Rotary Gear Pump was selected by Gisholt engineers to provide the power for the Hydraulic Speed Selector as well as the Collet Chuck and Bar Feed. The pump is driven at 1800 RPM and operates at a pressure of 400-700 PSI.

The small size of the Barnes Pump in comparison to the power it develops makes it ideal for such applications. The Barnes Constant-flo Rotary Gear Pump has been used with outstanding success on such applications as industrial torque converters, engine lubrication, transit coach torque converters, lubrication, diesel engine fuel transfer, automatic transmissions, machine tools, diesel locomotive heating systems, industrial oil filtering, industrial oil burners, and many other industrial uses.

Write today for descriptive literature and engineering data sheets suggesting numerous applications.

JOHN S. BARNES CORPORATION
301 S. Water St., Rockford, Illinois

Compact, Efficient, HIGH QUALITY, Long-Life Oil Pumps

New English Fords to Have Valve-in-Head Engine

It is believed that Ford is looking ahead to high compression for even its English-built cars. The engine currently being designed at the Rouge for Ford of England is a four-cyl design with overhead valves.

Synthetic Rubber Plants Save U. S. $2 Billion

P. W. Litchfield, board chairman of Goodyear Tire & Rubber Co., estimates that the synthetic rubber industry in this country has saved $2 billion for American consumers. He points out that of the 1.9 million tons of new rubber consumed from April 1, 1947, to the first of this year, 840,000 tons were provided by the synthetic rubber industry, and that without domestic synthetic production there would have been an acute shortage which would have resulted in prices going up to $1 a pound or more as against the current price of 19 cents.

(*Turn to page 258, please*)

the trend is to N-A-X HIGH-TENSILE STEEL for

BUMPERS • GRILLES • HOODS
FENDERS • BODY PANELS • DECK LIDS
FRAMES • BRACINGS • WHEELS • HUB CAPS
AND OTHER AUTOMOTIVE PARTS

for **High Strength • Finer Grain Structure • Good Formability • Great Impact-Toughness • Excellent Weldability High Corrosion-Resistance • High Fatigue-Resistance**

N-A-X HIGH-TENSILE MEETS ALL REQUIREMENTS OF S.A.E. 950

Specify N-A-X HIGH-TENSILE STEEL

GREAT LAKES STEEL CORPORATION

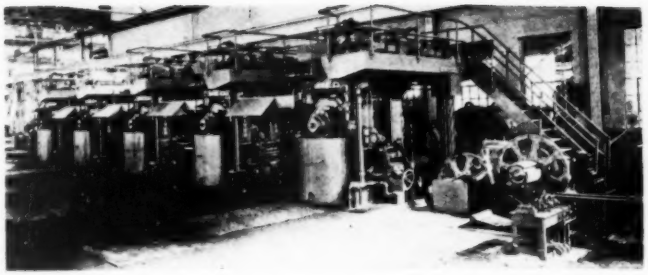
N-A-X ALLOY DIVISION • DETROIT 18, MICHIGAN
Unit of National Steel Corporation

General News

(*Continued from page 256*)

Ford Cites Hazards of Pension Plan

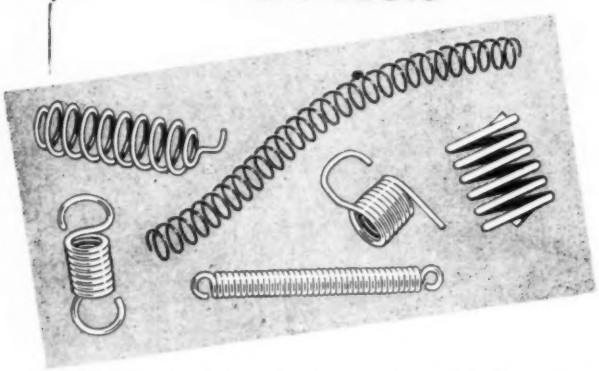
The Ford Motor Co. has served notice on the UAW-CIO that it will resist efforts of the union to obtain pension and social security benefits, if they result in higher prices on cars and trucks. John S. Bugas, vice president in charge of industrial relations, in a letter to Walter Reuther, union president, pointed out that Ford labor costs are now at an all time high in view of postwar wage increases and added benefits in the form of paid holidays, more liberal vacations, increased pension benefits, and other concessions. He stated further that the cost of living has been dropping, workers are being laid off in many industries, and that the sellers' market for automobiles has passed. He explained that any pension plan would raise the company's labor cost and would adversely affect Ford's ability to compete in the coming automobile sales battle. He reminded Mr. Reuther that the recent two cents an hour pay cut at GM puts an additional handicap on Ford in wage costs of about $5 million a year.



Producing cold rolled strip steel, the Acme Steel Co., Chicago, recently started operating this new $2.5 million five-stand tandem cold rolling mill.

NOW'S THE TIME...

GET A SPRING CHECK-UP ON COSTS



With buyers more cost-conscious, it's time to double-check your products price-wise. What about the springs you are now using, or planning to use? Are you *sure* they are the most *practical* and *economical* springs for the jobs required?

Lewis Spring engineers have saved manufacturers many hundreds of dollars by working carefully with design engineers in specifying more economical, but equally effective springs, for their products. Fancy "extras" don't contribute to product appearance or efficiency in most cases.

You can rely on Lewis Engineers' recommendations because they are underwritten by years of experience in the design, production and application of all types of springs for all types of products.

Get a spring check-up now. There's no obligation.

LEWIS SPRING & MFG. CO.
2644 North Ave., Chicago 47, Ill.

Lewis PRECISION **SPRINGS**

THE FINEST LIGHT SPRINGS AND WIREFORMS OF EVERY TYPE AND MATERIAL

Pontiac Passes Milestone With 3 Million Cars

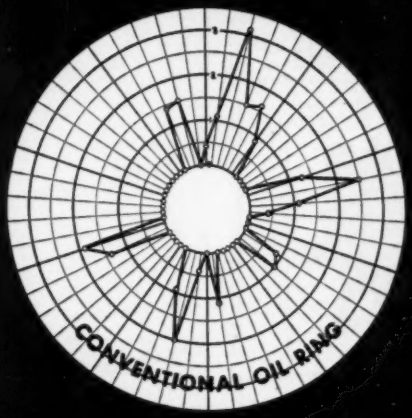
GM's Pontiac Motor Div. recently celebrated the production of its three millionth car. The three million vehicles were produced in just a little more than four production years with nearly a third of them turned out in 1941. Currently production is around 1200 cars a day, and it is expected that this will be increased soon. If steel and other materials are available in adequate supply, Pontiac hopes to reach maximum capacity of 2250 a day by the end of this year.

Flader and Clark Form Joint Company

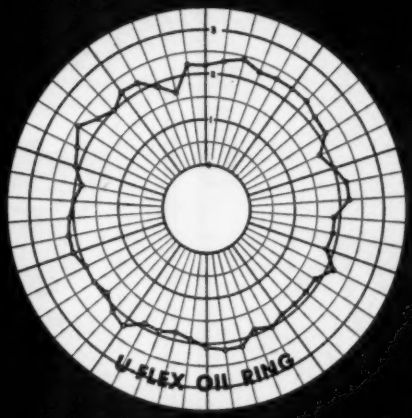
The Flader-Clark Corp. has been formed to further the application in industry of new principles of power propulsion, particularly in the field of axial-flow propulsion. The new company will tie together the engineering and research ability of Fredric Flader, Inc., North Tonawanda, N. Y., engineering and scientific research organization, and Dresser Industries, Inc., Cleveland and Olean, N. Y. Clark Bros. Co., Inc., Olean, a division of Dresser Industries, will contribute its manufacturing experience, facilities and equipment in the joint project. Clark Bros.

(*Turn to page 262, please*)

A COMPARISON OF THE PRESSURE PATTERNS TELLS THE U-*FLEX* STORY



A high-grade expander oil ring of conventional type recorded this radial wall pressure diagram on a testing machine that accurately simulates normal engine operating conditions.



The new Thompson U-FLEX ring recorded the pattern shown above when it was subjected to the same test given the expander type ring.

The above photograph illustrates the amazing flexibility of the U-FLEX, one-piece, heat-treated, carbon steel oil control ring.

The fine gaps between the U-segments meter oil in tiny, parallel tracks on the cylinder walls. Improved lubrication and oil economy result from this controlled oil distribution. Note, also, the generous oil drain area.

A COMPARISON OF THE TWO GRAPHS above shows one reason why automotive engineers are finding the new U-FLEX so efficient in oil economy and in preventing scuffing and wear of cylinder walls.

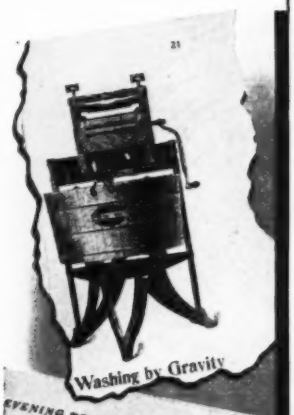
Note how the flexible, live-spring action of the U-FLEX, without the use of expanders, equalizes pressures at all points. The U-FLEX maintains constant, uniform radial pressure against cylinder walls in true bores and in bores worn out-of-round or tapered.

We submit the new U-FLEX to engine manufacturers as the most radical departure in piston ring design in 20 years. Why not learn what it can do for your engines?

Thompson Products

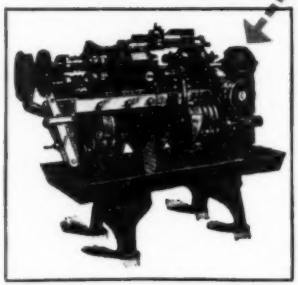
Cleveland • Detroit • Los Angeles • St. Catharines, Canada

ARE YOU USING 1906 Machines



HITCHCOCK'S MACHINE TOOL LIST, JAN. 1906

"Acme Automatic"



The Wholesale Screw Machine

For quick, accurate work it has no equal. One set of tools only. **Four** bars simultaneously operated upon.

The National-Acme Mfg. Co.
Cleveland, Ohio, U. S. A.
Branch Offices: New York, Boston, Chicago
FOREIGN REPRESENTATIVES:
Alfred H. Schutte *Schuchardt & Schutte*

In 1906, the "Acme Automatic" was a sales leader—the first multiple machine to produce small duplicate parts good enough and fast enough to reduce unit costs on the volume-produced, nationally-advertised products of the day—phonographs, washing machines, automobiles, "electrics", carriages and the like.

The old Acme Automatic is still a good machine—we find an occasional customer using one yet. *But it was not designed to produce today's parts, at today's costs for labor and materials.*

MODERN ACME-GRIDLEY AUTOMATICS are built in sizes:
Models RA-RB Bar Machine 9/16" to 5 1/8"—4, 6 and 8 Spindles.
Model RPA Chucking Machine 5 1/4" to 12"—4, 6 and 8 Spindles.

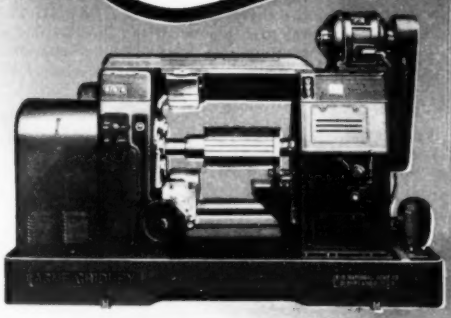
TO MAKE *1949 Models?*

To produce 1949 models—and make a profit—you can't get by with 1906 methods and machines—or even those of 1940!

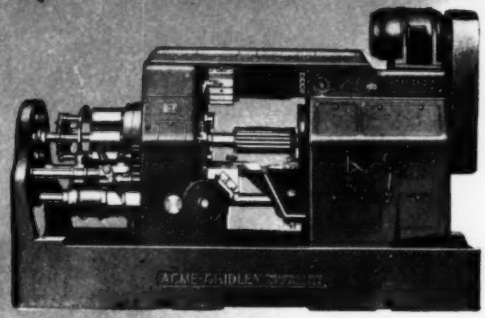
Any multiple spindle automatic that has not been continuously improved—improved in *strength*, in *precision*, in *adaptability*, in *output*—obsolete. Your competition is using equipment that will outproduce it, cut its production costs—and price you out of the market.

Forty thousand Acme-Gridley Bar and Chucking Automatics have a distinguished record over the years for lowering machining costs, to give you more good pieces in the pan at the end of each day. These time-proved records for production are no casual happenstance. They're based on a continuing policy of strict adherence to basic design requirements—ruggedness of frame, quick-change positive camming and, more recently, wider use of independent power-driven auxiliaries that eliminate many secondary operations.

Today's Acme-Gridley Automatics are built to give you *production*—as fast as modern tools will take it. With them you can meet *and beat* 1949 competition. We're prepared to quote them on the basis of guaranteed production figures. If your present machines are not postwar models it will pay you to make the comparison. May we help you?



Acme-Gridley Chuckers have a distinguished record for lowering production costs. Among their many moneysaving features is the wide, open tooling zone, permitting the use of independent power-driven auxiliaries that often eliminate secondary operations. Ask for bulletin CM43.

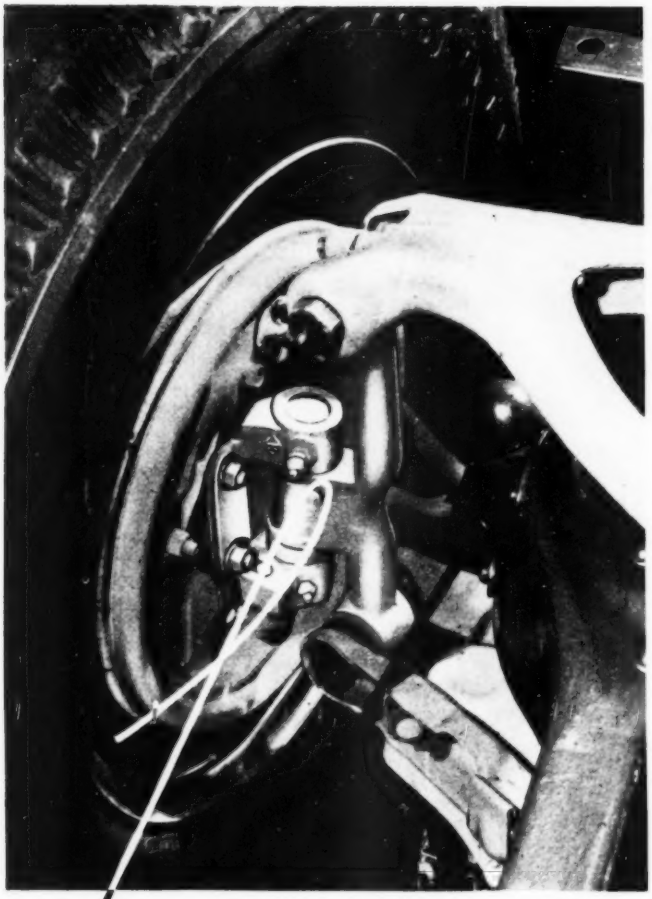


Acme-Gridley Bar Machines are known for their speed, stamina and adaptability. Rugged box-type frame, plus positive, close-coupled, quick-change camming provide a combination built for *speed*—as fast as modern tools will take. Ask for bulletin M45.

The NATIONAL ACME CO.

170 EAST 131st STREET • CLEVELAND 8, OHIO

Acme-Gridley 4-6 and 8 Spindle Bar and Chucking Automatics · Single Spindle Automatics · Hydraulic Thread Rolling Machines · Automatic Threading Dies and Taps · The Chronolog · Limit, Motor Starter and Control Station Switches · Solenoids · Centrifuges · Contract Manufacturing



forgings from **KROPP**

On modern, high speed automobiles the steering mechanism must not fail, for failure could mean disaster. Only forged parts can supply the strength and fatigue resistance needed to withstand the strains encountered.

In all industry, wherever strength and toughness are required, specify forgings. And for consistently high quality and dependable delivery, specify *Kropp* forgings. Our complete drop, hammer and upset facilities are at your service for the production of "forgings to your specifications."

KROPP FORGE COMPANY
5301 W. Roosevelt Rd., Chicago 50, Ill.

Are you receiving "FORGINGS" . . . the KROPP publication for industry? If you want to keep current on forging facts, send us your name and address and ask for "FORGINGS"

General News

(*Continued from page* 258)

makes heavy-duty gas and Diesel engines, gas compressors and oil-well drilling equipment. The new company will be 50 per cent owned by Fredric Flader, Inc., and 50 per cent by Clark Bros.

Three Austin Service Trucks to Tour United States

The Austin Motor Co., Ltd., (England) has placed three specially equipped service trucks in operation in this country. Factory trained mechanics will be traveling almost continuously in the trucks, eventually visiting every Austin dealer in the U. S., according to Eric Sadler, general service manager for the U. S. and Canada.

Bendix First Quarter Net Tops $3 Million

Stating that current trends in business activity will unquestionably challenge continued earning power, Malcolm P. Ferguson, president, Bendix Aviation Corp. disclosed that the company's consolidated net income was $3,102,625 for the first quarter of the 1949 fiscal year, as compared with $2,224,306 for the corresponding quarter of the previous year. Consolidated gross sales, royalties and other operating income for the three months ended Dec. 31, 1948, the first quarter of the 1949 fiscal year, amounted to $49,586,998, compared to $38,991,753 for the similar period last year.

Canadian Cub Aircraft Merges with General Radionics

Shareholders of the Cub Aircraft Corp. at a special general meeting in Hamilton, Ont., Canada, gave unanimous approval to measures which merge the company with General Radionics, Ltd., provide it with a new management, increase the capital, and change the name to Transvision-Television (Canada) Ltd.

K-F Survey Shows Interest In Local Automobile Shows

The Kaiser-Frazer Corp. reports that a poll of automotive writers indicates a preponderance of opinion in favor of community level automobile shows. According to H. M. Swartwood, advertising manager for K-F, most of the editors surveyed favored local shows, rather than a national exhibit, as a public service and as a merchandising factor for the days of hard competitive sales ahead.

(*Turn to page* 264, *please*)

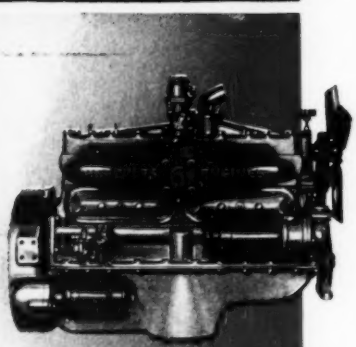
Power THAT CAN TAKE IT ...IN TRUCKS THAT "TAKE A BEATING!"

HERCULES ENGINES

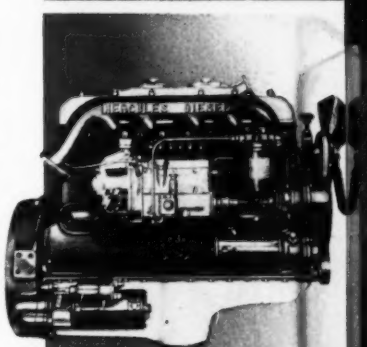
With fleet operating costs undergoing the closest scrutiny in years, truck and bus manufacturers are reviewing present designs with an eye to history making economies.

With dependable power one of the prime requisites for low operating costs we suggest a careful study of the outstanding performance records of high speed, heavy duty HERCULES ENGINES. For years Hercules Gasoline and Diesel Engines have enjoyed the reputation for continuous on-the-job performance . . . lowest possible cost per mile of operation . . . maximum fuel economy . . . and low maintenance. Truck and bus manufacturers who have installed Hercules Engines and fleet owners who have used them will vouch for this.

HERCULES ENGINES in both Gasoline and Diesel series—in sixes and eights—in vertical and horizontal types offer the Automotive Industry a wide selection of piston displacements and power ranges up to 500 H.P. Hercules' broad experience in designing, building and in the application of power to pertinent needs, plus its extensive and modern facilities, can prove to be priceless to you in planning future power requirements. You are welcome to use them.

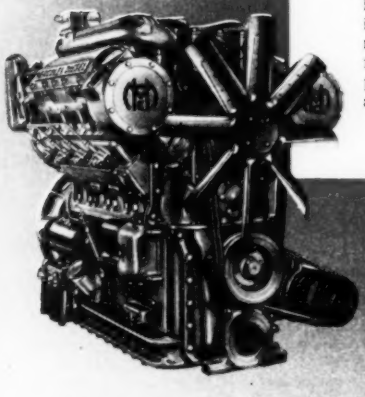


HERCULES GASOLINE ENGINES
14 series — 32 models
3-4-6 cylinders
3 to 240 horsepower
39 to 935 cu. in. Piston Displacement

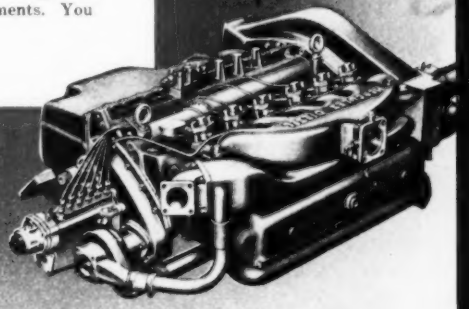


HERCULES DIESEL ENGINES
14 series — 30 models
3-4-6-8 cylinders
72 to 525 horsepower
193 to 1468 cu. in. Piston Displacement

HERCULES DIESEL ENGINES
Horizontal Type
These engines are designed for installation where minimum height is a requirement. They parallel in horsepower and piston displacement some of the popular vertical Hercules Diesel used in commercial vehicles.



HERCULES V-8 DIESEL ENGINES
These powerful, high speed, heavy duty V-8 Diesels look to the future of commercial vehicle requirements when larger even-powered horsepower must step up truck performance. The power range is from 340 to 500 H.P. Piston displacement — 1247 to 1468 cu. inches.



HERCULES MOTORS CORPORATION

CANTON, OHIO, U. S. A.

General News

(*Continued from page 262*)

Export Men Take Dim View of Automotive Exports

Export officials in the automobile industry are not optimistic about an early return of the foreign market to anywhere near the prewar level of between eight and 10 per cent. The general opinion is that it will be at least three to five years before economic conditions in other countries will be stabilized to the point where the prewar level of imports of American cars will again be possible. The percentage of cars exported from American plants has dropped steadily, with the total in January of this year only 6.3 per cent of automobile and truck production. In January, 1948, the industry shipped 8.7 per cent of its production abroad. One official believes that if the industry averages five per cent this year it will be doing well. South Africa, which has been a sizable market, will probably become even more restricted shortly because of the dollar shortage. GM, Ford, Hudson, Willys, Chrysler, Studebaker and Nash all have assembly plants there. GM and Ford spent about $4 million each on new plants since the end of the war in South Africa and have been hard hit by the restrictions on imports of parts for assembly.

FLAP BRAKING

This is the first published view of Navy Douglas AD-Skyraiders operating with unique brake flaps open in carrier group formation. Fuselage flaps open out from sides and bottom of the plane, act as brakes in high-speed dives, carrier approaches and in combat maneuvering. The Skyraider can carry three times the bomb-rocket-torpedo load conceived for the original of the series.

THE RIGHT **BALL**

Let Strom Help You

Not only in precision ball bearings, but in countless other places, Strom has found that the right ball will do the job better. Maybe your problem can be solved with the use of the proper ball. Why not take it up with Strom.

Strom has been making precision metal balls for over 25 years for all industry and can be a big help to you in selecting the right ball for any of your requirements. In size and spherical accuracy, perfection of surface, uniformity, and dependable physical quality, there's not a better ball made.

Strom STEEL BALL CO.
1850 So. 54th Ave., Cicero 50, Illinois
Largest Independent and Exclusive Metal Ball Manufacturer

Republic Making Two New Thunderjet Models

Two new models of USAF Republic Thunderjets, the F-84D and the F-84E, reflect the number of major changes in the performance and maintenance qualities of this jet fighter due to operational experiences in the field and production improvements at Republic Aviation Corp.'s Farmingdale, Long Island, plant. Approximately 500 F-84's have already been built and are now in service and about the same number are to be completed on present contracts. The F-84D has been in production for the past several months and scores of this model have been accepted by the Air Force. Its major improvements are along the lines of increased structural and maintenance qualities, reflecting new requirements stipulated as the result of field experience. These improvements include the reinforcement of the metal skins on the wings and ailerons, a winterized fuel system, changes to permit gasoline operation instead of kerosene, and substitution of mechanical instead of hydraulic shrinkage of landing gear. Production of the F-84D and a still newer model, the F-84E, is underway at the company's Farmingdale plant.

(*Turn to page 266, please*)

AUBURN

CLUTCHES

The introduction of the Auburn Clutch in 1938 marked the first basic advancement in the automotive clutch principle in more than 20 years. During the past 11 years Auburn has continued to lead the industry in the development and application of greater clutch efficiency. More than three million Auburn Clutches are now in service as original equipment.

AUBURN CLUTCH CO.
DIVISION OF DANA CORPORATION
AUBURN - INDIANA - U.S.A.

AUBURN

for
PASSENGER CARS
TRUCKS • BUSES
WHEEL TRACTORS

AUBURN · Brown-Lipe · Spicer

General News

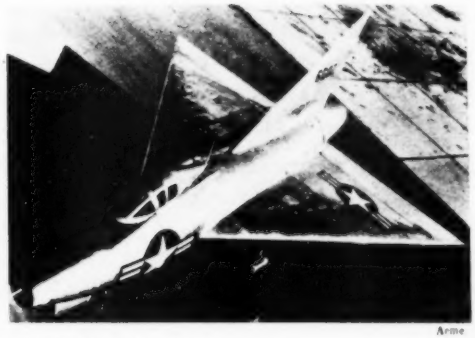
(*Continued from page 264*)

Edison Buys Plant to Up Battery Production

Thomas A. Edison, Inc., has bought a plant in Bremen, Ind., for the manufacture of lead-acid automotive batteries. The new 52,000 sq ft facility will supplement, and it is hoped eventually double present production at the company's Kearny, N. J., plant. Edison is planning a 40 per cent increase in the production of automotive batteries in the fall.

SWEPTBACK SHARPLY

Designed and built by the Consolidated Vultee Aircraft Corp., San Diego, Cal., the USAF's newest research aircraft, Model 7002, is reportedly the first airplane of this type to feature a Delta wing. An Allison J-33 turbojet engine powers this airplane.



Acme

"LIFE EXPECTANCY"

A Hoof Governor is like an unseen hand at the throttle of every piece of equipment you build, as it leaves your hands to go up against actual operating conditions. It is your assurance of greater "life expectancy" . . . continued delivery of the performance you have built into your product. It means economical operation, too . . . lower gas and oil consumption, protection against untimely repairs and parts replacements.

For many years Hoof Governors have proved they could dependably control the speeds of trucks, tractors, busses, and cars . . . as well as generators, arc welders, road machines, hoists and air compressors . . . *without sacrifice of power.* Every Hoof Governor is engine-tested on one of our dynamometers, and so designed for each individual application to provide full power, full torque, full acceleration.

If you have a governor problem the Hoof Engineering Department will welcome an opportunity to work with you.

HOOF *key and seal type* GOVERNORS

You are invited to write for an interesting brochure of governor tests.

HOOF PRODUCTS CO., 6543 S. Laramie Ave., Chicago 38, Ill.

Job Listings Number 2600 In Automotive Field

A survey of the automotive industry by the AMA shows that 2600 different job classifications are in effect, indicating the wide range of activity necessary to produce motor vehicles. Classifications range from blacksmiths and woodcarvers to physicists and locomotive engineers. Approximately 10 per cent of the total job classifications are in final assembly. A typical firm has 90 classes of assembly jobs, 160 machine operating classifications, 50 different categories of press jobs, 75 in forging, 40 in welding and 160 in foundry work. In addition, there are about 1100 different kinds of non-production jobs in automotive plants, the AMA says. These include tool and die making, maintenance, inspection, engineering, machine setting, materials handling and many others. In addition to the production and non-production classification, there are an additional 600 individual ratings for salaried employes. The AMA points out that the million employes currently on motor vehicle company payrolls in this country represent an increase of about 50 per cent over 1941 and double the number employed in 1929, which was the record year for automobile production in the United States.

Wico Electric to Get Edison's Magneto Operations

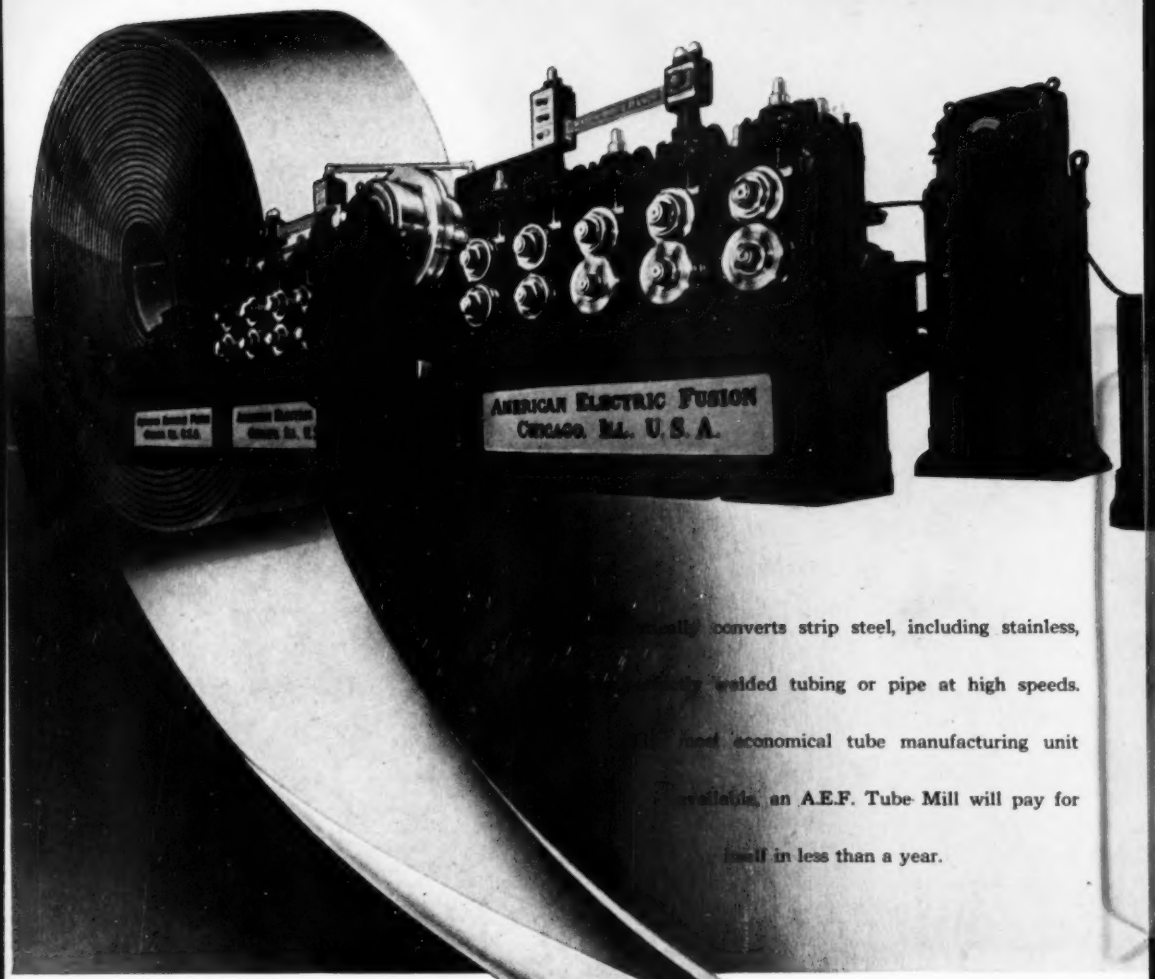
The Wico Electric Co., West Springfield, Mass., is acquiring the magneto and magneto parts manufacturing and distribution operations of Thomas A. Edison, Inc., West Orange, N. J. on May 1, 1949.

USAF Names Northrop XF-89 Scorpion

Made by the Northrop Aircraft Corp., the USAF's newest all-weather jet fighter, the XF-89 has been named the "Scorpion." This plane has a service ceiling of over 40,000 ft and a design gross weight of more than 30,000 lb. It has a wing span of approximately 50 ft.

(*Turn to page 269, please*)

For Lowest Cost Steel Tubing



converts strip steel, including stainless,

welded tubing or pipe at high speeds.

economical tube manufacturing unit

available, an A.E.F. Tube Mill will pay for

itself in less than a year.

Roll Your Own on

A.E.F.
ELECTROWELD TUBE MILLS

Mechanical tubing and standard weight pipe for the Automotive, Marine, Railroad, Home Appliance, Electrical, Furniture, Machinery, Petroleum, Food, Chemical, Construction and Other Industries.

AMERICAN ELECTRIC FUSION CORPORATION

2610 DIVERSEY AVENUE • CHICAGO 47, ILLINOIS

Cable Address: AEFCORP, Chicago

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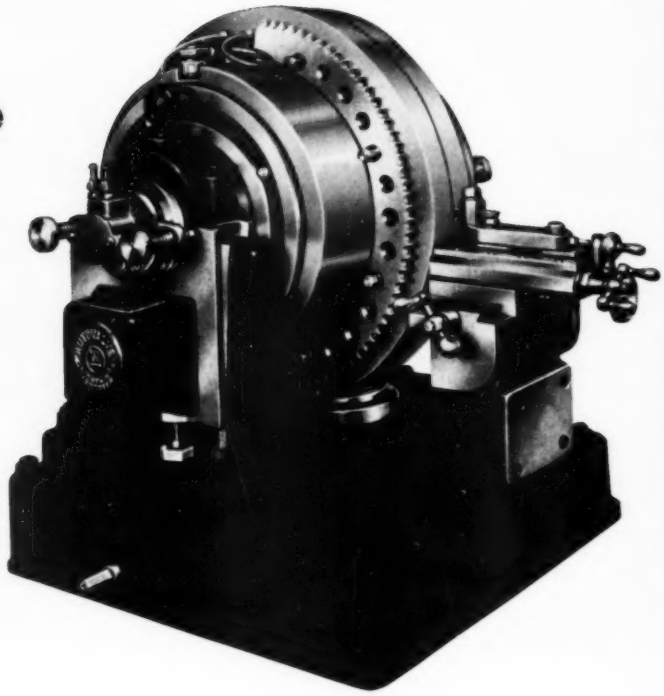
The Heart of the A.E.F. TUBE MILL



THE EXCLUSIVE A.E.F. WELDING UNIT WHICH WELDS A GIVEN THICKNESS WITH UP TO 50% LESS KVA DEMAND THAN ORDINARY TUBE WELDERS

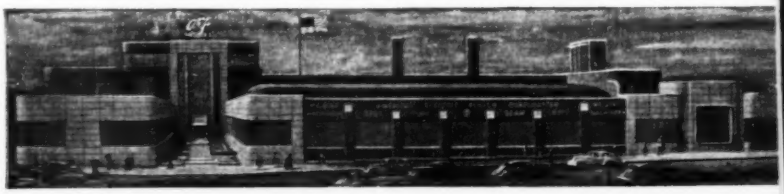
Dependable A.E.F. Welding Units will produce perfect welding at lower operating cost than is possible with conventional tube welders. The A.E.F. patented design rotary transformer eliminates current-consuming long leads, operates at electrical efficiency of over 90%. The unique system of oil-cooling is another feature that makes possible 24-hour-per-day operation and eliminates entirely the danger of transformer failure. The Welding Unit is mounted on ball bearings and is rotated by the friction on the tube. It automatically adjusts itself to the speed of forming without any slippage.

For long, uninterrupted service, low power consumption, economy, efficiency, and above all, quality of weld, there is nothing else comparable. Take the first step toward cutting your tubing costs. Write for descriptive catalog.

1. 60 KVA LIGHT WALL MILL produces tubing with wall thickness from .025" to .093" and outside diameters from ¼" to 2½"; with slight modification at factory, limits can be extended to make tubing up to 3" O.D.

2. 170 KVA MEDIUM WALL MILL produces American standard weight pipe from ½" to 2", as well as mechanical tubing up to 4" O.D. with maximum wall thickness of .156".

3. A.E.F. HEAVY WALL MILL produces tubing up to 6" O.D. Detailed information on request.



A.E.F.

AMERICAN ELECTRIC FUSION CORPORATION

2610 DIVERSEY AVENUE • CHICAGO 47, ILLINOIS

Cable Address: AEFCORP, Chicago

Printed in U.S.A.

General News

(*Continued from page 266*)

a length about the same, and is about 15 ft high. Powered by two Allison J-35 jet engines, each rated at 4000 lb thrust, the "Scorpion' is reportedly in the 600 mph class.

SAE to Discuss Gas Turbines

The question of gas turbines for automotive use will get a working over at the SAE Summer Meeting at French Lick, Ind., in June. At least one prominent Detroit automotive engineer will present a paper on turbines.

Atomic Energy Research Used to Improve Rubber

Atomic energy research is being put to work in an effort to determine what makes rubber bounce. According to Dr. Howard E. Fritz, B. F. Goodrich Co. vice president, researchers are unable to explain the bounce in rubber and experiments on the subject are being conducted at the new Goodrich research center near Brecksville, O. He says that it is hoped that research with such by-products of atomic energy as radioactive tracers will help explain the reason for the bounce in rubber and result in better tires and other rubber products.

GE Electronic Instrument Aids Jet Research

Developed by the General Electric Co., an "electron diffraction instrument" is aiding engineers of the National Advisory Committee for Areonautics in their search for better metals and lubricants for aircraft jet engines. Employing a stream of electrons, it is used in determining the effects of various lubricants and in friction studies of polished metal engine parts.

Tool Engineers Schedule Exposition for 1950

The American Society of Tool Engineers has announced that its industrial exposition will be held next year March 20-24 in Cleveland.

Magnesium Group's Annual Mtg. In Chicago, April 19-20

The Magnesium Association has announced that its Fifth Annual Meeting will be held April 19-20 in Chicago, Ill. Quarterly meetings of the Association will be held July 14-15 at Niagara Falls, Canada; Sept. 15-16, Detroit, Mich.; and Nov. 17-18, New York City.

(*Turn to page 270, please*)

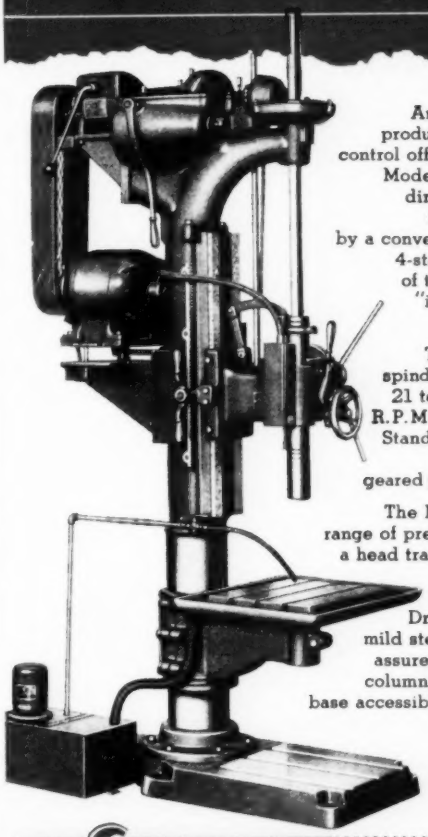
NOTICE

The New

SIBLEY MODEL D

DRILLING MACHINES

in 24" and 28" SWING



An operator gains greater productivity from the ease of control offered by the new Sibley Model D. The V-belt drive is direct to a 4-speed geared transmission, controlled by a conveniently located lever. A 4-station switch at the front of the machine includes an "inching" button to facilitate changing speeds.

Three optional ranges of spindle speeds are available: 21 to 365 R.P.M.; 25 to 419 R.P.M.; and 37 to 650 R.P.M. Standard equipment includes automatic spindle stop; geared power feeds; back gears.

The Model D handles a wide range of precision drilling jobs with a head travel on the hand scraped column of 25" and a spindle feed of 11". Drilling capacity is 1¾" in mild steel. The heavy table arm assures rigidity and swings on column, to make the machined base accessible for a working surface.

Model D-24 Drilling Machine is illustrated complete with coolant pump and fittings, electrical reversing, 5 H.P. motor, magnetic starting switch, and rectangular oil groove table.

SIBLEY

MACHINE & FOUNDRY CORP.
11 EAST TUTT STREET
SOUTH BEND 23, INDIANA

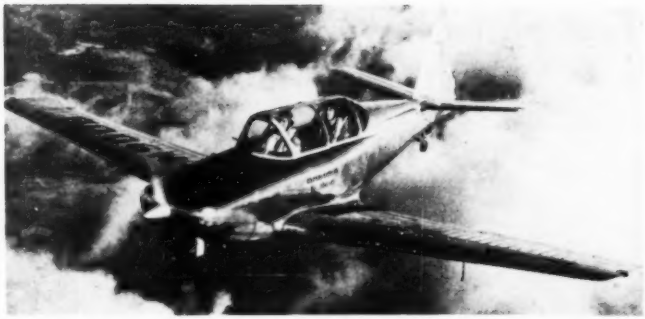
SIBLEY MACHINE & FOUNDRY CORP.
11 East Tutt St., South Bend 23, Indiana
Send Catalog No. 68.
Name _____ Title _____
Company _____
Address _____
City _____ State _____

General News

(*Continued from page* 269)

Pension Demands on Ford Equal 40-45 Cent Boost

Nothing official has come out of Ford Motor Co. in the way of an estimate of the cost of the pension and social security program to be sought by the UAW-CIO this year. However, various unofficial estimates place the initial cost at close to $250 million for the first year. The union is asking $100 a month pensions for employes, starting at 60 years of age, and the most conservative estimates place the estimated cost at 15 per cent of the payroll with others as high as 20 per cent. Another five per cent is being demanded for social security, health and welfare funds. If the demands were to be granted in full, the cost to the company has been estimated as representing an increase to the workers equivalent to 40 to 45 cents an hour.



READY FOR CONTRACT

Developed by the Texas Engineering and Mfg. Co., this new military-type primary trainer, the TE-1A recently completed its tests successfully, and is now being offered to the USAF and foreign governments. A two-place, plane of all-metal construction, it is powered by a 145-hp Continental engine. It has a wing span of 29 ft, 4 in., and an overall length of 20 ft, 10¾ in.

Follow the leaders of industry and replace slow, inaccurate, costly methods with the Centerless Lapping Machine.

With this Centerless Lapping Machine you obtain, without special operating skill, precision finishes of less than 2 micro inches on such materials as steel, glass, carbide, norbide and sapphire. No costly set-ups or special tools. Handles diameters .01 to 10.00". Automatic feed attachment available.

You'll find this unit ideal for lapping oversize bearings, lapping and sizing bearing races, bushings, shafts and cylinders; for lapping oversize gages; for salvaging worn gages by lapping to the next lower size. Send for Catalog 47.

Size Control Reversible "Go" and "No-Go" Plug Gages give 6 times service life.

SIZE CONTROL COMPANY

MAKERS OF PLAIN, THREADED, AND TWIN PLUG GAGES . . . THREAD RINGS, SNAPS
THREAD, GEAR, AND SPLINE WIRES . . . PIN AND DRILL GAGE SETS, FRACTIONAL SETS
2536 W. Washington Blvd., Chicago 12, Ill. Phone: Monroe 6-6710

DIVISION OF
AMERICAN GAGE & MACHINE COMPANY
SIZE CONTROL CO. Precision Gages
WALSH PRESS AND DIE CO. Punch Presses
WACKER SALES, Affiliate Precision Inspection Equipment
Engineering Representatives in Principal Cities

Albion Malleable Buys WAA Steel Foundry

The government-owned steel foundry at Albion, Mich., has been sold to its wartime operator, the Albion Malleable Iron Co., for $350,000. It originally cost about $1.8 million. It has been operated since the war by the Albion firm under an interim lease expiring as of 1952. The wartime capacity was about 25,000 tons of malleable iron castings for heavy army trucks.

1948 Motor Vehicle Sales Set at 5,285,425 Units

Official and final tabulation by the AMA shows that production of cars and trucks in this country last year was 5,285,425 units. The total was exceeded only in 1929 when production was 5,358,420 vehicles. Official truck factory sales total for the year was 1,363,856 units, an all-time record. Passenger cars accounted for 3,909,270 units and motor buses 12,299. Exports during the year declined nearly 15 per cent from the 1947 total, and accounted for only eight per cent of total output.

(*Turn to page* 271, *please*)

General News

(*Continued from page 270*)

TWO JET SLASHER

Called the Cutlass, the U. S. Navy's newest jet fighter, the Chance Vought XF7U-1, powered by two Westinghouse turbo-jet engines is shown landing at Hensley Station, Dallas, Tex. This plane is rated in the "over 600 mph" class.

Army

New USAF Interceptor Jet, Republic XF-91

A new high altitude interceptor airplane, the USAF XF-91, designed and built by the Republic Aviation Corp., has completed its taxi tests. Powered by a turbo-jet engine, the XF-91 will also have rocket motors for accelerated take-off and climb, and for operation at extreme altitude. The plane's fuselage length is over 45 ft, and its wing span is about 30 ft.

Bell to Hire 800 by July 1st

The Bell Aircraft Corp. hac announced that it will increase employment by approximately 800 workers by July 1st. This will bring the company's total employment to 2800 workers.

1947 Tire and Tube Shipments Valued at $1547 Million

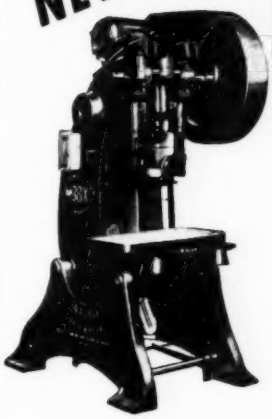
Products valued at $1547 million were shipped by manufacturers in the tire and inner tube industry during 1947, according to preliminary figures recently announced by the Bureau of the Census, Dept. of Commerce. This represents an increase of 166 per cent over the $580.9 million value of products reported by this industry in 1939, when the last Census of Manufactures was taken.

Correction to Article on Hydraulic Valve Lifters

Attention has been drawn to an error in the identification of one of the machines in the article on "Making Hydraulic Valve Lifters" which was published in AUTOMOTIVE INDUSTRIES Feb. 15, 1949. The three-spindle precision boring machine for turning, facing, and boring the closed end of plungers, described on page 44 and illustrated on page 45 is an adaptation of one of the new precision boring machines recently developed by New Britain-Gridley. The application at the DED plant is an outstanding example of its kind and it is regretted that the item was not credited properly.

NEW! WALSH NO. 38X PUNCH PRESS

THE VERSATILE 38-TON PRESS FOR
- PRODUCTION
- TOOL ROOM
- TEST RUNS



You get much in addition to economical production from this new, open back, inclinable punch press. Use No. 38X in your tool room for shearing-in dies and punches. Use it for die tryouts in place of a screw press. This high speed punch press gives exact indication of results on the production run . . . shows up defects in material at once, where the slower screw press would yield a perfect sample.

Large shut height and bolster plate area make Walsh No. 38X ideal for many notching, forming and die-casting trimming operations. Die space 11" with a 4" stroke; bed area 18" by 26"; throat depth 12". Stroke up to 6" available in either flywheel or back-geared type. Variable speed or conventional motor drive.

No. 38X gives you all the standard design features that make Walsh presses strong, accurate, speedy, safe and economical. Write for full information.

Also New!
WALSH 28A ARCH PRESS

A 28-ton capacity arch press especially suited for your die-casting trimming operations; plastic, rubber trimming work; and sheet metal fabrication. Flywheel, back geared, or with gearhead motor.

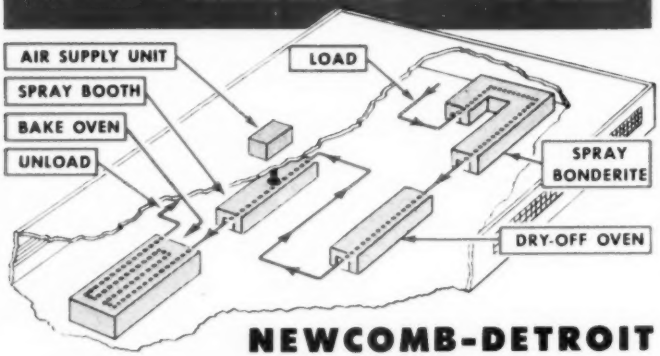
WALSH PRESS & DIE CO.
4743 W. KINZIE ST. CHICAGO 44, ILL. PHONE ESTEBROOK 8-6700

DIVISION OF
AMERICAN GAGE & MACHINE COMPANY
SIZE CONTROL CO. DIVISION — Precision Gages
WALSH PRESS & DIE CO. DIV. — Punch Presses
WACKER SALES DIVISION (Affiliate) — Precision Inspection Equipment
Engineering Representatives in Principal Cities

It will pay you to consult your nearest Walsh Press Sales Engineer:

SCHULTZ & ANDERSON CO., Newark, N. J. • GIERSTON TOOL CO., Buffalo, Binghamton, Elmira, Jamestown, Syracuse, New York • KOREST-PETERSON CO., Detroit, Mich. • WM. W. COX, Camp Hill, Pa. • ARMIN H. WILLE & ASSOCIATES, Pittsburgh, Pa. • WM. MARSHALL, Minneapolis, Minn. • STAN SYBRANDT, Cleveland, Ohio • DICK GUIMONT, Indianapolis, Ind. • ALPHA CORPORATION, Greenwich, Conn. • BERNARD & CO., Robertson, Mo.

Here's a PRE-ASSEMBLED FINISHING SYSTEM



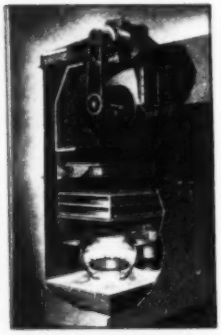
NEWCOMB-DETROIT

Engineered – Built – Installed It

for **PORTABLE DISH WASHERS**

Every piece of equipment in this finishing system was pre-assembled and factory-tested for performance prior to shipment from the Newcomb-Detroit plant. Even the air supply system is pre-assembled and stationed on the plant roof to save space.

The system is used to rustproof (in the six-station spray bonderite section), spray paint (white synthetic enamel) and bake portable dish washers in the eastern plant of one of the world's largest appliance manufacturers. The entire system was designed, built and installed by Newcomb-Detroit and the pre-assembly technique used saved many man-hours in field assembly and try-out as well as the usual long disruption of plant production.



This is the pre-assembled Uni-Wash Air Supply unit installed on the roof. It is a compact, complete system in one unit. Available in a wide variety of capacities.

This is typical of Newcomb-Detroit engineering and construction. And they have applied this ingenuity to finishing systems for all types of industries during the last thirty-five years. Why not drop a line for your Newcomb representative to drop in and discuss your finishing problem? No obligation . . . just write Newcomb-Detroit, 5747 Russell St., Detroit 11, Michigan.

EST. 1912

NEWCOMB-DETROIT

Engineered Systems—Standard Units

Spray Booths • Ovens • Metal Parts Washers • Fans
Dust Collectors • Heaters • Air Handling Equipment

Grand Rapids Div.—Plant	Main Office and Plant	Western Sales
GRAND RAPIDS 2, MICH.	DETROIT 11, MICH.	CHICAGO 5, ILL.

Business in Brief

Written by the Guaranty Trust Co., New York, Exclusively for AUTOMOTIVE INDUSTRIES.

Business activity continued to decline generally during the week ended Feb. 19. The *New York Times* index of activity for that week stands at 148.8, as compared with 150.7 in the preceding week and 150.3 a year ago.

Sales of department stores during the week ended Feb. 19, as reported by the Federal Reserve Board, equaled 228 per cent of the 1935-39 average, as compared with 239 in the week before. Sales were 8 per cent below the corresponding distribution a year ago, and the total in 1949 so far reported is 1 per cent less than the comparable sum in 1948.

Electric power production during the same period declined to the lowest level reached this year. The output was 7.5 per cent above the corresponding amount in 1948, as compared with a similar advance of 6.3 per cent shown for the preceding week.

Railway freight loadings during the week ended Feb. 19 totaled 697,335 cars, 0.3 per cent less than the figure for the week before and 13.4 per cent below the corresponding number recorded in 1948.

Crude oil production in the same week averaged 5,361,000 bbl daily, 31,050 bbl more than in the preceding week and 18,775 bbl above the comparable output in 1948.

Production of bituminous coal and lignite during the week ended Feb. 19 is estimated at 10,755,000 net tons, 6 per cent less than the output in the week before and 12.6 per cent below the corresponding quantity in 1948.

Civil engineering construction volume reported for the week ended Feb. 24, according to *Engineering News-Record*, was $75,622,000, 49 per cent less than preceding weekly figure and 42 per cent below the comparable sum in 1948. The total recorded for eight weeks of this year was 38 per cent more than the corresponding amount in 1948. Private construction was 56 per cent above that a year ago, and public construction increased by 22 per cent.

The wholesale price index of the Bureau of Labor Statistics during the week ended Feb. 22 was unchanged at 158.5 per cent of the 1926 average. The index was 0.2 per cent lower than four weeks ago and 0.9 per cent less than the corresponding figure in 1948. An increase in prices of grains, livestock and meats was offset by decreases in hides and skins, fuels and some textile products.

Member bank reserve balances decreased $6 million during the week ended Feb. 23. Underlying changes thus reflected include increases of $71 million in money in circulation and $22 million in non-member deposits and other Federal Reserve accounts, accompanied by decreases of $163 million in Treasury deposits with Federal Reserve banks and $79 million in Reserve bank credit.

Total loans and investments of reporting member banks decreased $159 million during the week ended Feb. 16. A decline of $28 million in commercial, industrial, and agricultural loans was recorded. The total of these business loans during the eight-week period ended Feb. 16 declined $348 million, as compared with a decrease of $106 million in the corresponding period a year ago.

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We aren't boasting! Whether you call them spacer tubes...ferrules...sleeves...or butted tubes—Formetal makes more of them than anyone else in the world... and the reason is simple. Because of our production, we make them better for less money than you can in your own plant.

Here's why you make a real savings when you buy Formetal Spacer Tubes. First, they are economical... cost less than welded or seamless tubing or pipe. Second, they are made to your specified dimensions (I.D.—O.D. and length) so they come to you *ready to* use. Third, they save you cutting off and burring operations, leaving your machinery open for other production. Fourth, they eliminate waste of material on your part, and save you handling time.

In addition, they can be produced from the exact metal or alloy you specify—with special seams, slots, or cut-outs, plain or plated. Hundreds of stock dies available for your job mean better prices and speedier delivery, too! We're really geared to save you money...so why not give us a chance to quote. If you'll send blueprints and specifications, we'll guarantee a prompt reply!

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NATIONAL FORMETAL COMPANY, INC.

ESTABLISHED 1919

Manufacturers of "Superformed" Bushings and Bearings...and Spacer Tubes

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1949 Chrysler

(*Continued from page 176*)

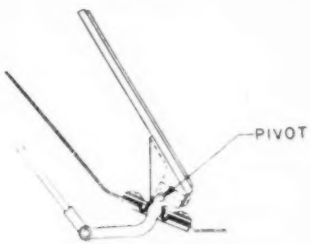
thing riding comfort has been improved by the increase in wheelbase and consequent cradling of passengers within the suspension system. Other changes in the suspension system itself augment the gain in ride.

The well-known Chrysler fluid drive transmission now has an improved type of main hydraulic pump and an entirely new system of hydraulic control valving which combine to assure better and smoother performance without changing its fundamental operating characteristics. Changes are the same as those described for De Soto and Dodge. See AUTOMOTIVE INDUSTRIES, Mar. 1, 1949, page 28.

Among the noteworthy safety features incorporated in these cars is the marked increase in windshield and rear window area, and the introduction of a leather covered, sponge-rubber safety cushion which extends across the top of the instrument panel from door to door.

Although both six- and eight-cylinder engines remain practically the same in specifications, better performance and economy are said to result from an increase in compression ratio and other changes to be noted. On the sixes, output has been upped by two hp to 116 hp at 3600 rpm, with a compression ratio of seven to one. On the eights, output remains at 135 hp as before but this power is now developed at 3200 rpm instead of 3400 rpm. Compression ratio has been increased to 7.25 to 1.

The electrical system now has better weather-proofing and other protection. All spark plugs are fitted with weather-proof covers, consisting of a steel bowl and a flexible Neoprene cap for the terminal end. Vinylite nipples are fitted at distributor connections and coil terminal. In addition to being splash-proof, the distributor has a Bakelite cap with a concentric ring and radial barriers inside to prevent arcing of high tension current. Ventilation and drainage are afforded by a baffled ¼ in. hole in the base.



Accelerator pedal linkage has been redesigned to eliminate sliding friction at the floor board.

The distributor cap contains a built-in 10,000-ohm resistor which serves also to provide a low resistance, soft carbon tip acting as the center conducting brush. Spark plugs too are of resistor type, combining with the distributor resistor to suppress interference with radio and TV reception. The new spark plugs together with a high output ignition coil permit the use of an initially wider spark plug gap and with it reduced electrode erosion. This is also responsible for an improvement in idling and low-speed, light load performance.

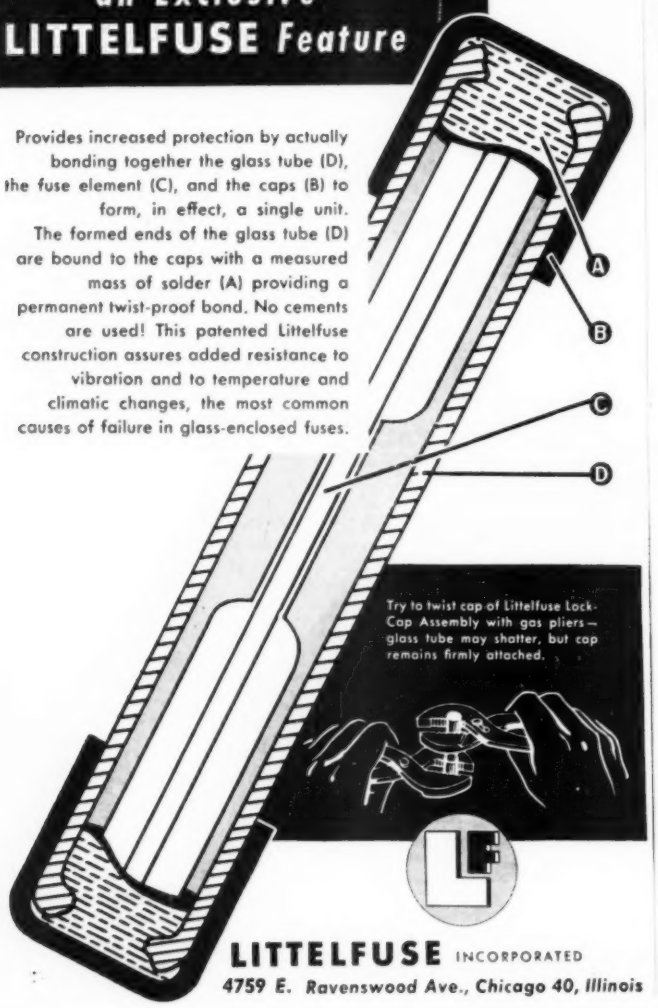
Generator output has been increased from 35 to 40 amp on the sixes, from 40 to 45 amp on the Saratoga and New Yorker, and from 45 to 50 amp on the Crown Imperial. An improvement on the larger output eight-cylinder engine generators is provision of a ventless, Welch plug type cover with a restricted oiler for better lubricant retention.

The starter unit has been made more compact with the adoption of a new type of over-running clutch of concen-

(*Turn to page 278, please*)

THE LOCK-CAP ASSEMBLY
an Exclusive
LITTELFUSE Feature

Provides increased protection by actually bonding together the glass tube (D), the fuse element (C), and the caps (B) to form, in effect, a single unit. The formed ends of the glass tube (D) are bound to the caps with a measured mass of solder (A) providing a permanent twist-proof bond. No cements are used! This patented Littelfuse construction assures added resistance to vibration and to temperature and climatic changes, the most common causes of failure in glass-enclosed fuses.



Try to twist cap of Littelfuse Lock-Cap Assembly with gas pliers—glass tube may shatter, but cap remains firmly attached.

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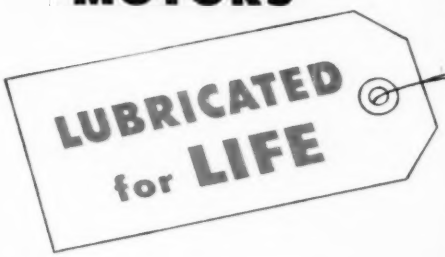
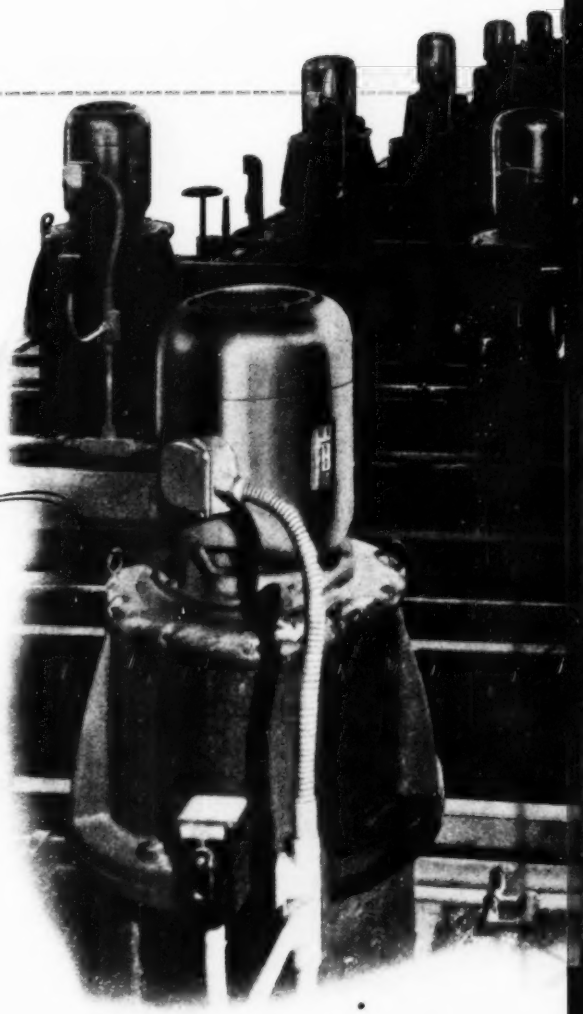
Tough lubrication job?

NOT WITH MOTORS





It costs money to "baby" electric motors with constant greasing attention, whether it's a few or a few hundred.

That's why Life-Line motors offer new and important savings in plants like this one using 119 Life-Line vertical motor drives, and in any others using a-c motors from 1 to 50 horsepower.

Life-Line motors cut down operating costs every day, every week, they are in service, because they need *no* lubrication—*for life.* Sealed, pre-lubricated bearings insure long life—reduce motor outages caused by overlubrication and underlubrication—reduce machine shutdowns and lost production.

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Motors

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HM-140
Another product of Du Pont research
—a new, better heat-resistant "LUCITE"
acrylic resin molding powder with improved
features for the automotive industry.

New "Lucite" HM-140 offers these improved features

for horn buttons...for hood ornaments...for instrument dials... for lamp lenses...for reflectors...for medallions

IMPROVED MOLDING PROPERTIES

Du Pont now offers a heat-resistant "Lucite" composition that can be molded as readily as general-purpose acrylics. In many instances, this means shorter molding cycles, less shrinkage of the molded piece, and a considerable reduction in rejects.

BETTER COLOR

In its crystal-clear form, the new composition is even more water-white than well-known "Lucite" HM-122. And its color is more stable at higher molding temperatures and on exposure to outdoor weathering. Now you can obtain a plastic part even more brilliant and lustrous than before.

OF SPECIAL INTEREST TO MOLDERS AND DESIGNERS OF MOLDED PARTS—

New "Lucite" HM-140 is much more heat-stable than "Lucite" HM-122, which has been widely used in the automotive industry. For thin or intricate sections, *higher* molding temperatures can be used to attain the greatest degree of fluidity possible—without chemical breakdown. Because of its better flow properties, it can be molded into thick sections at *lower* temperatures. These features provide a wider molding range and improved molded parts.

New "Lucite" HM-140 fits right into your "Micro-Styling"* plans

"Lucite" HM-140 with its luxurious beauty...its wide range of long-lasting colors...its rugged durability...is ideal for those little things that impress the style-conscious customer. "Lucite" has given outstanding performance in a wide range of automotive applications since 1937. The improved features of this new Du Pont plastic mean that hood ornaments, horn buttons, lenses, dial faces—all of the accessories included in Micro-Styling—can now be even more practical and attractive when made of "Lucite."

* **Micro-Styling:** *the design of small but important automobile accessories for beauty and utility too.*

Tune in—Du Pont's famous "Cavalcade of America"—Monday night, NBC coast to coast!

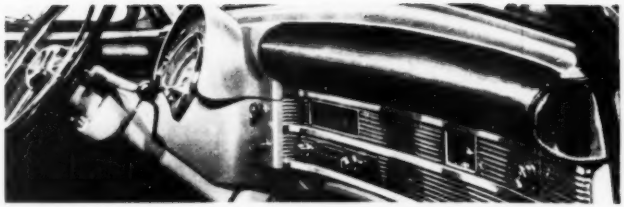
Write for further information on "Lucite" HM-140 and other Du Pont plastics. No obligation. If you wish, Du Pont technical men will be glad to consult with you in confidence and advise on applications of Du Pont plastics to help your design and engineering plans. Write to the Plastics Department, E. I. du Pont de Nemours & Co. (Inc.), at the most convenient address: General Motors Bldg., Detroit 2, Mich.; Empire State Bldg., New York 1, N. Y.; 7 S. Dearborn St., Chicago 3, Ill.

DU PONT
REG. U.S. PAT. OFF.
Plastics
BETTER THINGS FOR BETTER LIVING
. . . THROUGH CHEMISTRY

tric construction with forged and hardened cams. The solenoid has been relocated to provide more clearance for servicing the filter. The switch on the instrument panel combines the function of ignition switch and starter switch. The lead from the switch to the engine compartment is heavily armored to prevent tampering.

A new oil bath air cleaner of larger capacity but lower silhouette has been adopted. The fuel pump, of new type and higher capacity with a dual air dome on the vacuum side, marks the elimination of the usual filter and gasket and sediment bowl.

Accelerator pedal linkage has been simplified through use of a pivot at the bracket with a bell-crank to the throttle linkage. Lighter pedal pressure has been effected by a heavier over-center spring and low friction linkage at spring connections. At the same time clutch pedal shaft mounting has been altered by running it through the side rail and mounting it in roller bearings.



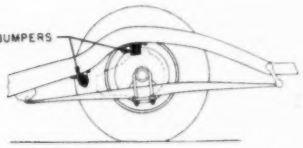
A leather-covered, sponge-rubber safety cushion extends across the instrument panel to protect front passengers and driver in case of a collision.

Another important feature of the engine is the Parko-Lubriting of cylinder walls to prevent scuffing during break-in.

A pressure cap is now standard for the cooling system. On eights the radiator core has been reduced in area by more than 16 per cent without affecting cooling.

Cycle-Bonded brake linings are standard and added quietness and cooler brake operation now obtain through the adoption of a heavier, high ribbed brake drum with a concave surface. The hand brake has been improved by the addition of a double pawl arrangement.

The static height of front springs has been increased to 11 in., up by 1¼-in. A major change at the rear is found in the new mounting of shock absorbers which are inclined inward at the top by about 45 deg. The lower mounting now is attached to the axle rather than below the spring, thus providing more road clearance and greater protection from stones and gravel, making possible the elimination of the former integral stone shield. Two intermediate rubber limit bumpers are mounted on the frame midway between the rear axle and spring pivot. They engage the springs slightly before engagement with rear axle bumpers and thus minimize road shocks.



A rubber limit bumper has been added at each side of the frame between the rear axle and spring bracket. It engages the spring before the axle strikes its bumper.

Gear shifting has been made easier and more positive through new gear shift control lever lengths and more rigid connecting links. Gear shift lever vibration on rough roads is reduced

(*Turn to page 280, please*)

New MERZ PICO Surface Comparator

eliminates human variables in surface control — takes exact readings electronically, right on the production line!

The new MERZ Pico Comparator checks surfaces the fastest, most accurate way known—*electronically, against a Master.* Eliminates human element entirely—gives exact, automatic meter readings on parts of all types in about 5 seconds. Makes production line surface control simple as routine dimensional gaging!

Unit is furnished complete with meter, exploring head and adapter. It is self-contained in a sturdy aluminum case, with carrying handle and storage drawer. Weighs only about 15 lbs. Can be operated from any standard 110-volt, 60-cycle line. Special heads and adapters available for the most intricate jobs.

It will pay you to investigate the many ways MERZ Pico Comparators can raise the standards of your surface control—cut your checking costs. First cost is remarkably low; savings continuous. Write for a demonstration in your own plant.

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by moving the bell crank from the engine to the frame.

Bodies have greater vision and increased sweep of windshield wipers. On four-door bodies the rear doors are hinged from the center post. The instrument panel has been redesigned with the five main instruments contained in a semi-circular housing directly in front of the driver. A bull's eye lens in the headlamp sealed-beam lens makes more effective use of the rays from a new bullet-shaped bulb. Shorter focal length of the lamp makes possible the concentration of more light from the filament.

British Vehicle Output Up 15 per cent in 1948

BRITISH automobile production for 1948 totaled 628,000 units, composed of 335,000 passenger cars, 177,000 trucks and 116,000 agricultural tractors. This is an increase of 15 per cent over the 1947 figures and is greater than the peak prewar effort.

Exports were 226,911 passenger cars, valued at $240,676,324; 75,091 trucks valued at $147,058,920; and 63,057 agricultural tractors with a value of $71,438,036.

The automobile industry has now taken the lead as Britain's greatest exporter, surpassing cotton which for some time held the premier position. Britain's biggest individual client was Australia which absorbed 53,384 passenger cars and 75,091 trucks. The United States was the second biggest buyer of passenger cars, with 24,497, followed in order of importance by South Africa, Belgium, India and Pakistan, Canada, New Zealand, Brazil, Portugal British Malaya, and Switzerland.

The highlights of the year, says the Society of Motor Manufacturers & Traders, was the $40 flat rate tax, first postwar show, production above prewar peak, manufacturers' information pool, the appointment of an automobile industries representative in America and the appointment of a shipping expert.

It is pointed out that there is a trend towards higher powered cars. Whereas in the first quarter of the year engines of 97 cu in. represented less than a quarter of the whole, at the end of the year they had risen to a third of the total.

It is pointed out that in several countries the backlog of war shortage has been made up and new markets will have to be found or existing ones expanded. Bilateral negotiations between the British Board of Trade and various countries are proceeding and it is expected that these will open up some of the closed or partially closed markets. Individual demand is strong in Argentina, Brazil, Denmark and Finland.

The 1949 releases for the home market are expected to be 75,000 passenger cars, 50,000 trucks and 7700 buses. The allotment of passenger cars for the home market will be nearly 25 per cent less than last year. It is estimated that 75 per cent of British automobiles is prewar, thus putting a big burden on maintenance. It is hoped that the home market situation will be eased in 1949.

New British Jet Climbs 7.5 Mi in 7.5 Min

One of Great Britain's newest turbojet airplanes, the experimental Beryl-Meteor twin-jet fighter, recently climbed to a height of 7.5 mi in 7.5 min.

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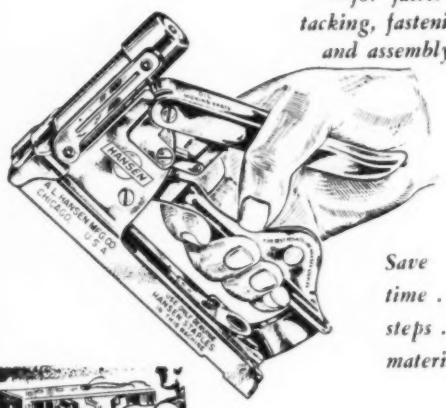

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WHEREVER tacking, fastening or assembling is done, use the Hansen one-hand Tacker for increased speed, greater efficiency and improved quality — whether on the production line or shipping room.

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Among the many uses of Hansen are—auto trimming—tacking plywood—installing seat covers and kick-pads — fastening beading around glass — gimp bindings — lining shipping cases with felt wadding—insulation in truck and trailer bodies and buildings — wires in radio cabinets, etc.

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Hansen Tackers are well-balanced, light-weight, easy to operate with one hand. Fast as you grip you can drive single-leg or double-leg staples or tacks. Among the many fastening jobs you do, are some that Hansen can do *better, faster.* **REQUEST FOLDER**

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Legal Status of Delivered Prices and Freight Absorption Nearing Solution

By Eugene J. Hardy
Washington Bureau

LIKE the giant arms of a military pincer movement, the many facets of the basing point controversy are converging on the same result—legal authorization for industry to absorb freight in order to meet competition. In other words, the end of the struggle by businessmen to achieve a practical solution to the price chaos fostered by the Federal Trade Commission is now in sight.

Whether the Supreme Court, the Congress, or even the Federal Trade Commission re-establishes the right of businessmen to absorb freight is an incidental question. The important thing is that the period of doubt and uncertainty as to the legality of pricing methods soon will be ended.

Just what form the forthcoming approval of freight absorption will take is still anybody's guess. At the very least, sanction will probably be given to the practice of prepaid freight when requested by the customer.

It is entirely possible that the Federal Government will go still further and approve systematic freight absorption, provided (1) such absorption of shipping costs is made in good faith to meet a competitor's price, and (2) there is no combination or conspiracy among sellers.

One thing is clear, however. Basing point systems as they were employed prior to 1948 are out. Gone forever. There is no return.

The decision of the Supreme Court to review the Rigid Conduit case came as a surprise to no one. There is general agreement that the court may rule—probably within the next 90 days—that the circuit court's decision was in error and that there is nothing illegal about delivered prices—provided such prices are not derived via the conspiracy route.

In the Rigid Conduit case, the circuit court upheld the Commission's order in which count one held that this industry had conspired to use the basing point system and in count two found that individual use of the basing point method with knowledge that it was used by other sellers also constituted an unfair method of selling. Elimination of count two of this order, according to some sources, means that industry could legally quote delivered prices and absorb freight if this was done in good faith to meet competition.

There is also a distinct possibility that the FTC may take it upon itself to end the controversy. The Commission at the present time is giving more serious attention to clarifying the situation than at any time previously. Particular attention is being directed to count two of the Conduit order. It would not be too surprising if the Commission, in its presentation to the Supreme Court on the Rigid Conduit case, on its own motion modified its order in this case. Should this situation come about, it is also not too much to expect the Commission to modify its order in the Pittsburgh Plus case—giving the U. S. Steel Corp. authority to absorb freight.

But despite what ruling may be forthcoming from the Supreme Court and the FTC, there is still considerable sentiment on Capitol Hill for legislation which would definitely spell out industry's authority to absorb freight and quote delivered prices. It is felt

(*Turn to page 282, please*)

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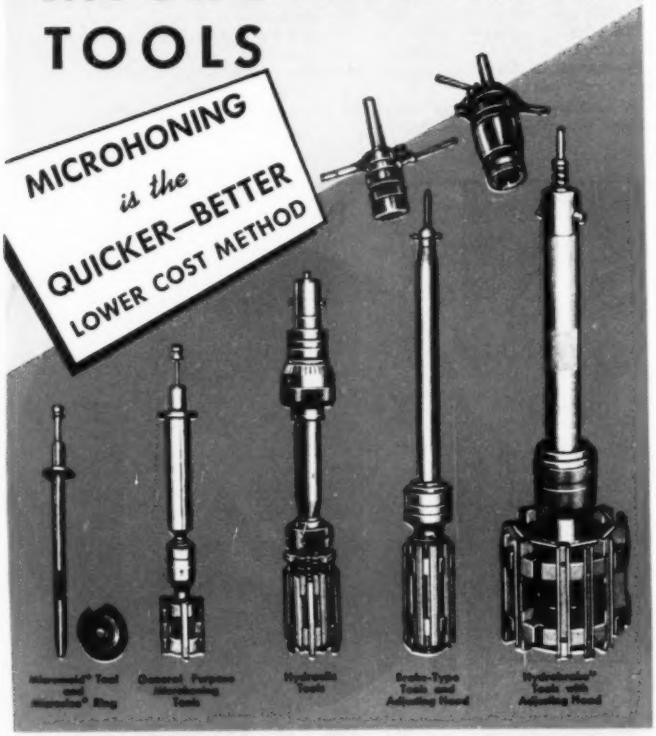

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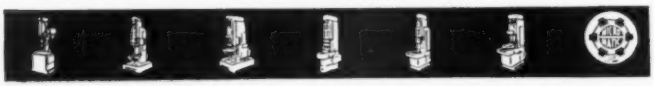

that this is necessary due to the fact that what the courts and FTC have done and may undo, they can do again sometime in the future. In other words, there is a growing conviction among both Democrats and Republicans in Congress that clarifying legislation must be enacted regardless of what the FTC's policy may be from week to week.

The legislative situation has been moving rapidly in recent weeks. Previously, the only bill that was being given serious consideration was S. 236, sponsored by Senators Johnson, Democrat, Colorado, and Capehart, Republican, Indiana. This measure would amend the antitrust laws so as to permit freight absorption in the absence of conspiracy.

At the present time, this bill has been given a back seat in favor of Democratic-sponsored legislation introduced in the House by Representative Walter, Democrat, Pennsylvania, and in the Senate, Senator Myers, Democrat, Pennsylvania. These bills, H. R. 2222 and S. 1008 would suspend for 16 months those antitrust laws which either directly or indirectly rule out delivered prices. In the wording of the sponsors, the legislation calls for a moratorium to permit the operation of "individual, good-faith delivered price systems and freight-absorption practices."

Prospects for the passage of this legislation are reasonably bright since Senator Johnson has agreed to give priority to the moratorium measure rather than his own bill, S. 236. However, it is not too likely that the Congress will act on a moratorium proposal until after the Supreme Court hands down its ruling in the Rigid Conduit case.

While the moratorium proposal is new insofar as legislation is concerned, it has been discussed in industry circles for many months. It is felt that this proposal has merits for two reasons: (1) that over a 16-month period an exhaustive and impartial study could be conducted resulting in legislation which would stamp out all traces of the FTC's f.o.b. mill crusade, and (2) that within the next two years, the supply and demand situation in cement and steel will be somewhere nearer a normal situation which would clearly outline for Congress the chaos created by the Commission's crusade.

Summing up, it appears that one way or another the issue will be settled—and settled soon, notwithstanding the economic theorists in the administration who have fought and who will continue to fight any pricing system other than f.o.b. mill. The various arms of the Federal Government are apparently coming around to the realization that the present problem is basically a nonpartisan one and must be realistically settled once and for all if businessmen are to have any confidence in the legality of their sales methods.

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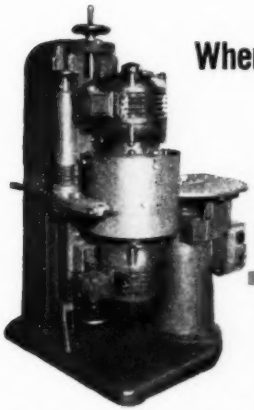

No. 902 Besly Vertical Spindle Grinder for small coil springs, carbon brushes, ceramic parts, etc. Handles up to 4000 pieces per hour — $\frac{1}{8}$" to 1" O.D. and from $\frac{1}{4}$" to 4" long.

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Whatever the job specifications may be, there's sure to be a Besly Grinder that will do the work faster on closer tolerances —*with greater economy*. Sizes range from those that handle the smallest parts to large capacity units for grinding railroad car springs and similar large pieces. Fourteen different types are available to select from. Besly engineering adapts basic models to specific requirements of the user. Versatility in doing many grinding jobs well is characteristic of Besly Grinders. Conversion from one job to another is quickly made by easy replacement of the work holder.

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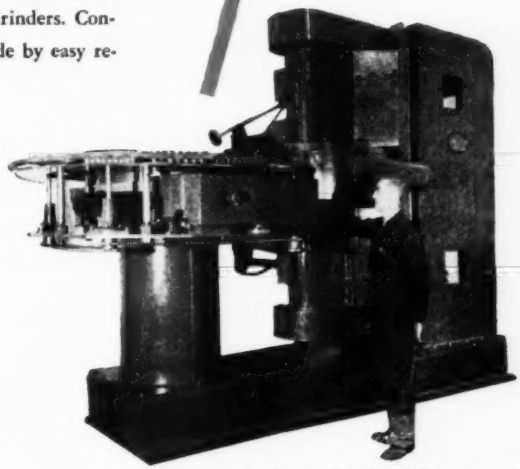

No. 926—53" Besly Double Spindle Vertical Grinder with power driven rotary fixture and multiple station feed wheel. Tooled for coil springs $\frac{1}{4}$" to 6" long—800 to 1500 per hour.

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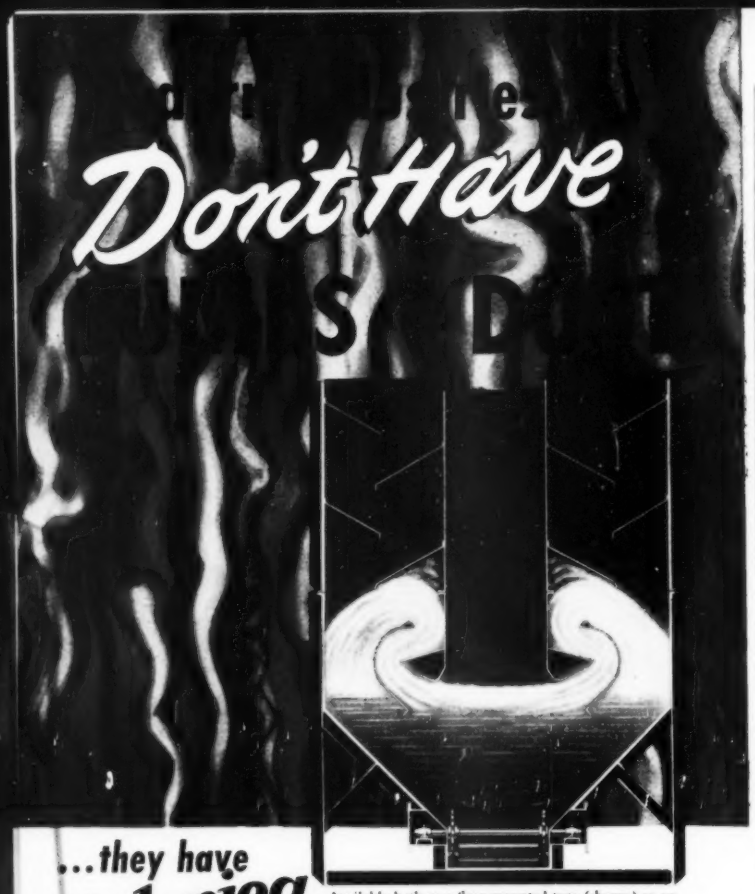
BESLY

CHARLES H. BESLY & COMPANY • 118-124 North Clinton Street, Chicago 6, Illinois
***Factory:* Beloit, Wisconsin**



...they have Schmieg CENTRI MERGE

Available both as a floor-mounted type (shown) or an overhead installation. Complete with a motor-driven sludge removal convevor, where required.

AUTOMATIC ELIMINATION
from Collection to Disposal

Operators of modern plants have long since learned the economy of ridding their shops of destructive dust and smoke fumes. Men who work in plants free of these health hazards feel better, work better, produce more. And the accident rate is lowered. In actual plant operation, the Schmieg CENTRI-MERGE method of dust and fume elimination has shown marked advantages over any other system. Dust and fumes are collected *immediately they occur*—shot back on a stream of air through ducts to the Collection Unit. In the washing chamber of this unit—a veritable tornado of seething, churning water-dust is washed and scrubbed from the air and flooded into the sludge tank below, permanently trapped under water. Fumes go out the exhaust. AUTOMATIC operation from start to finish.

If you are interested in learning why the CENTRI-MERGE method is so highly endorsed by plant owners and how its application can so greatly benefit your own operation, our engineers are prepared to give you some eye-opening information on dust and fume elimination—without obligation, of course.

THE best AIR PURGE is CENTRI MERGE

Schmieg INDUSTRIES INC.
Engineers & Manufacturers

310 PIQUETTE AVENUE • DETROIT 2, MICHIGAN

AIRBRIEFS

(*Continued from page* 180)

day of the two-seat lightplane is definitely over and he personally sees no further production of them except as trainers, crop dusters, or other commercial uses. Personal aircraft production during 1948 saw the output of four-place airplanes actually exceed that of two-place models. Piper believes the four-placer is now a better buy on a "more plane for the money" basis, since his new four-place Clipper is tagged at only $2,995, a figure few two-place producers can even approach. Piper says that at $700 per seat, the four-place airplane is now down to the price of one of the better automobiles, which means that the goal of "competitive with the family automobile" is now well in sight.

Freedom Lost

Little did U. S. airlines know that the recent election in which Newfoundland joined Canada as a province would hold consequences for them. But the Canadian government has informed the U. S. that U. S. airlines can no longer pick up or discharge commercial business at Gander, the western terminus of the trans-Atlantic portion of U. S.-Europe flight schedules. The U. S. thus loses the so-called "Fifth Freedom," at least temporarily. Resumption of the freedom is expected this summer when both governments reopen the U. S.-Canadian transport agreement under which the airlines of both nations have been operating. Meanwhile, Trans-Canada Airlines handles all Gander commercial traffic. U. S. airlining refueling stops will continue at the Gander base.

1949 Plymouth

(*Continued from page* 178)

increased rebound control in front shock absorbers. Further gain is made by newly designed rubber limit bumpers. The new mounting of rear shock absorbers allows for greater road clearance and reduces side sway by providing greater stability.

A new type of fresh air car heater, offered in three models, is said to step up defrosting and remove window fog more readily. It is located under the hood and may be used in warm weather as a fresh air circulator.

There has been adopted the type of seat construction which allows the addition of extra spring coils to suit the weight of occupants, if desired.

Engine and other components on the 111-in. wheelbase chassis are the same as those on 118½ in. chassis except for dimensional changes due to the shorter wheelbase.

Here's how Bonderizing may CUT YOUR Metal Polishing COSTS

Are you looking for a way to cut high metal polishing costs on formed or drawn products? This may be the answer:

Bonderize the steel before forming or drawing

Frequent line stoppages to dress dies contribute to high unit costs. Scratches in production pieces require costly finishing.

With Bonderizing to protect the metal surface, the need for slow, expensive hand polishing to remove scratches is minimized. Sharply reduced, too, is the scrap rate. Bonderizing brings production through the dies in condition to keep your line moving.

A smoother finish

Bonderizing before forming or drawing results in a smoother finished product. The nonmetallic phosphate crystals of the Bonderite coating absorb and hold lubricants under pressure, act as an anti-flux to reduce galling and scratching, speed production, and increase die and tool life.

Increases production

The use of Bonderite prior to forming or drawing can mean greater production and lower unit costs by keeping pieces off the repair line and on the assembly line. Thus Bonderizing contributes to continuous, efficient conveyor line operation.

How about pre-finishing?

Manufacturers turning to automatic pre-finishing of flat metal stock can further benefit by Bonderizing prior to forming or drawing. Bonderite can cut costs here, too!

Saving money for others now!

Hub cap production in one plant is up 100%, costs are down about 40% with blanks Bonderized before forming. Other manufacturers report big savings, too. We'll gladly work with you to determine the application of this new technique to *your* production.

Parker

Bonderite, Parco, Parco Lubrite—Reg. U. S. Pat. Off.

PARKER RUST PROOF COMPANY
2178 East Milwaukee Ave.
Detroit 11, Michigan

BONDERIZING Holds Paint to Metal . . . PARKERIZING Inhibits Rust . . . PARCO LUBRIZING Retards Wear on Friction Surfaces

The new Snyder plant is unique in that it was designed and built specifically for the production of special-purpose machinery and is one of the most perfectly equipped and efficient plants in the world. In nearly a quarter-century of operation the Snyder organization has created an immense variety of special-purpose machines for many industries—aircraft, automotive, coal mining, farm equipment, electrical, food processing, glass, oil, pharmaceutical, railroad, refrigeration, valve manufacturing, etc. Whether applied to production or to assembly, all these machines have a common objective—to control the factors which control costs (time, precision, finish, scrap, fatigue, safety) and thus to control profits. If your objective is high production at low unit cost, we invite your inquiries.

SNYDER
SPECIAL MACHINES
CONTROL COSTS

24 Years of Successful Cooperation with Leading American Industries

SEE OUR CATALOG IN SWEET'S FILE

SNYDER TOOL & ENGINEERING COMPANY

3400 E. LAFAYETTE, DETROIT 7, MICHIGAN

DIRECTORY

(*Continued from page 248*)

SAUNDERS-ROE, Ltd., Osborne, East Cowes, Isle of Wight, Eng.
SCOTTISH AVIATION, Ltd., Prestwick Airport, Ayrshire, Eng.
VICKERS-ARMSTRONGS, Ltd., Weybridge, Surrey, Eng.

AMERICAN AIRCRAFT ENGINES

For details of their products see pages 166 and 167.

AIRCOOLED Motors, Inc. (Franklin), Syracuse 8, N. Y.
CAMERON Aero Engine Corp., Reading, Penna.
CONTINENTAL MOTORS Corp., Aircraft Engine Div., Muskegon, Mich.
GLADDEN Products Corp. (Kinner), Glendale 4, Calif.
JACOBS Aircraft Engine Co., Pottstown, Penna.
LYCOMING, Div. Avco Manufacturing Corp., Williamsport 38, Penna.
PRATT & WHITNEY Aircraft, Div. United Aircraft Corp., East Hartford 8, Conn.
RANGER Aircraft Engines, Div. Fairchild Engine and Airplane Corp., Farmingdale, N. Y.
The WARNER Aircraft Corp., Detroit 5, Mich.
WRIGHT Aeronautical Corp., Div. Curtiss-Wright Corp., Wood-Ridge, N. J.

SMALL GASOLINE ENGINES

For details of their products see pages 168 and 169.

BRIGGS & STRATTON Corp., Milwaukee 1, Wisc.
CLINTON Machine Co., Clinton, Mich.
CONTINENTAL Motors Corp., Air Cooled Engine Div., Detroit, Mich.
CUSHMAN Motor Works, Inc., Lincoln 1, Neb.
ERIE Engine & Mfg. Co., Erie, Penna.
FRAZER Farm Equipment Corp., York, Penna.
GLADDEN Products Corp., Glendale 4, Calif.
HOMELITE Corp., Port Chester, N. Y.
INTERNATIONAL HARVESTER Co., Chicago 1, Ill.
JACOBSEN Manufacturing Co., Racine, Wisc.
KERMATH Manufacturing Co., Detroit 8, Mich.
The LAUSON Company, New Holstein, Wisc.
LE ROI Company, Milwaukee 14, Wisc.
McCULLOCH Motors Corp., Los Angeles 45, Calif.
NOVO Engine Co., Lansing 5, Mich.
D. W. ONAN & Sons Inc., Minneapolis 5, Minn.
REO Motors, Inc., Lawn Mower Div., Lansing 20, Mich.
SALSBURY Motors, Inc., Pomona, Calif.
UEBELHOER Brothers, Inc. (Ultimotor), Buffalo 15, N. Y.
UNITED Engine Co., Lansing, Mich.
UNIVERSAL Motor Co., Oshkosh, Wisc.
WISCONSIN Motor Corp., Milwaukee 14, Wisc.

AIRCRAFT GAS TURBINE ENGINES

For details of their products see page 169.

ALLISON Div., General Motors Corp., Indianapolis 6, Ind.
GENERAL ELECTRIC Co., Aircraft Gas Turbine Div., West Lynn, Mass.
PRATT & WHITNEY Aircraft Div. of United Aircraft Corp., East Hartford 8, Conn.
WESTINGHOUSE ELECTRIC Corp., Aviation Gas Turbine Div., Lester, Philadelphia 13, Pa.

(*Turn to page 288, please*)

. . give your customer the best !

How long would it take to break the soil on the average American farm with a shovel? If the farmer could start soon enough, and work fast enough each day . . . it might be done! At least, it's a sure way to get it started!

Now that Spring is in sight, agricultural machinery that has been idle all winter is suddenly going to be put to use! Cold weather's highly corrosive action has been at work many months.

Those *important* parts that have been made from inferior material; those parts that have no "guts" to protect against deterioration will not be worth their weight in scrap! Premature failure of these inferior parts cost the unsuspecting farmer untold amounts in time and money!

Farmers are not metallurgists . . . or engineers; they are not supposed to concern themselves with strength of materials or factors of safety! The American farmer depends on the manufacturer of the equipment he buys to give him the best . . . to build with the right materials that will give him service with a capital "S"!

Leading manufacturers of farm equipment are specifying *Unitcastings* for dependable parts. Whether their purpose is to withstand corrosion or abrasion . . . tension or torque, *Unitcastings* will do the job right! Dependable quality is integral in *every* Unitcasting from low carbon to high tensil alloy. Give your customer the *best* . . . build with *Unitcastings!*

Unitcast Corporation, Steel Casting Division, Toledo 9, Ohio. *Detroit Office:* 701 New Center Building, Detroit 2, Michigan. *In Canada:* Canadian-Unitcast Steel, Ltd., Sherbrooke, Quebec.

PRODUCTS LAST LONGER BUILT WITH STRONGER UNITCASTINGS

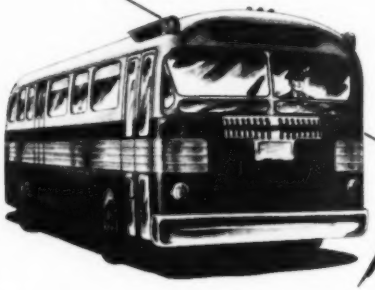
UNITCAST
Corporation
ELECTRIC STEEL CASTINGS

FOR LONGER LASTING SERVICE

Choose the Finest

ATTWOOD

AUTOMOTIVE HARDWARE



Transportation equipment must be built from the chassis up to withstand the rugged requirements of today's heavy usage. And when it comes to the trim and hardware this is a twofold job. Here's where Attwood Hardware meets the challenge by providing top functional service as well as retaining its bright beauty through rugged use and long wear. Smartly styled, cast in noncorrosive brass and carefully plated, Attwood Brass products offer the equipment builder top-flight quality hardware and trim for automobiles, buses, trucks, commercial cars and trailers.

Send today for your copy of the new Attwood Automotive Hardware Catalog No. 25. Sixty pages of the finest Automotive Hardware and Trim. Complete with illustrations, specifications and current prices.

ATTWOOD

BRASS WORKS

OFFICES IN PRINCIPAL CITIES

Write to 846 Front Ave., N.W., Grand Rapids 4, Michigan

DIRECTORY

(*Continued from page 287*)

AMERICAN OUTBOARD MOTORS

For details of their products see page 170.

ATLAS Supply Co. (Royal), Newark, N. J.
CHAMPION Motors Co., Minneapolis 13, Minn.
CHRIS-CRAFT Corp., Grand Rapids, Mich.
CORSAIR Outboard Motor Co., Minneapolis 13, Minn.
EVINRUDE Motors (Elto and Evinrude), Milwaukee 9, Wisc.
FIRESTONE Tire & Rubber Co., Akron 17, Ohio.
GAMBLE-SKOGMO, Inc. (Hiawatha), Minneapolis, Minn.
GOODYEAR Tire & Rubber Co. (Sea Bee), Akron, Ohio.
JOHNSON Motors, Waukegan, Ill.
The LAUSON Company, New Holstein, Wisc.
MARTIN Motors, Div. of National Pressure Cooker Co., Eau Claire, Wisc.
METAL PRODUCTS Corp. (Flambeau), Milwaukee 12, Wisc.
MUNCIE Gear Works, Inc. (Neptune), Muncie, Ind.
SCOTT-ATWATER Co., Minneapolis 13, Minn.
SEARS, ROEBUCK & Co. (Elgin), Chicago, Ill.
MONTGOMERY WARD (Sea King), Chicago, Ill.
WEST BEND Aluminum Co. (Elgin), West Bend, Wisc.

BRITISH AIRCRAFT ENGINES

For details of their products see page 171.

ALVIS, Limited, Coventry, England.
ARMSTRONG SIDDELEY Motors, Ltd., Coventry, England.
BLACKBURN Aircraft, Ltd., Brouch, East Yorks, England.
BRISTOL Aeroplane Co., Ltd., Filton House, Bristol, England.
DE HAVILLAND Engine Co., Ltd., Edgware, Middlesex, England.
ROLLS-ROYCE Ltd., Derby, England.

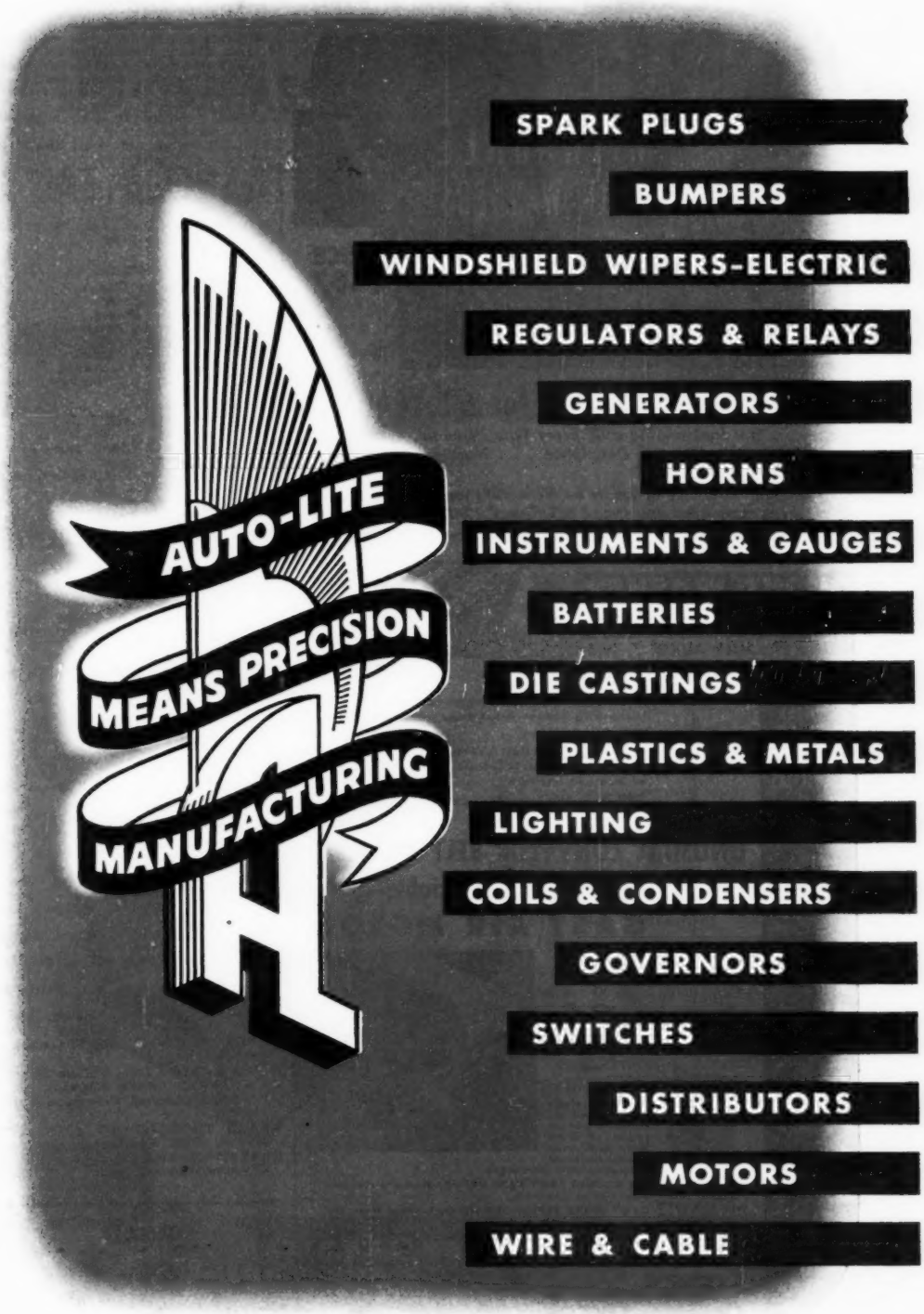
FOREIGN PASSENGER CARS

For details of their products see pages 172 and 173.

BRITISH

A. F. N. LTD. (Bristol, Frazer-Nash), Isleworth, Middlesex, England.
ALLARD Motor Co., Ltd., Clapham, S.W.4, England.
ALTA Car & Engineering Co. Ltd., Surbiton, Surrey, England.
ALVIS Ltd., Coventry, England.
ARMSTRONG SIDDELEY Motors, Ltd., Coventry, England.
ASTON MARTIN Ltd., Feltham, Middlesex, England.
AUSTIN Motor Co., Ltd., Longbridge, Birmingham, England.
CITROEN Cars Ltd., Slough, Bucks, England.
DAIMLER Co. Ltd. (Daimler, Lanchester), Coventry, England.
FORD Motor Company, Ltd., Dagenham, Essex, England.
H.R.G. Engineering Co. Ltd., Tolworth, Surrey, England.
HUMBER Limited (Humber, Hillman, Sunbeam-Talbot), Coventry, England.
INVICTA Car Development Co. (London) Ltd., Virginia Water, Surrey, England.
JAGUAR Cars Ltd., Coventry, England.
JENSEN Motors Ltd., West Bromwich, Birmingham, England.
JOWETT Cars Limited, London, W.1, England.
LAGONDA, Ltd., Feltham, Middlesex, England.
LEA-FRANCIS Cars, Ltd., Coventry, England.
MORGAN Motor Co., Ltd., Malvern Link, Worcestershire, England.

(*Turn to page 290, please*)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MEANS PRECISION
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SPARK PLUGS
BUMPERS
WINDSHIELD WIPERS-ELECTRIC
REGULATORS & RELAYS
GENERATORS
HORNS
INSTRUMENTS & GAUGES
BATTERIES
DIE CASTINGS
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COILS & CONDENSERS
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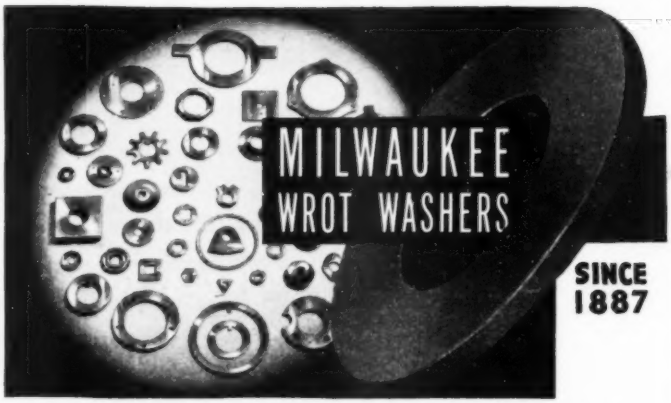
SWITCHES
DISTRIBUTORS
MOTORS
WIRE & CABLE



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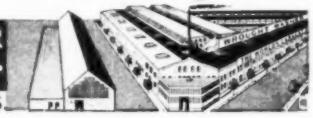
WASHERS . . . Standard and Special, Every Type, Material, Purpose, Finish . . . STAMPINGS of every Description . . . Blanking, Forming, Drawing, Extruding.

Your most dependable source of supply — the world's largest manufacturer of Washers, serving Industry since 1887. Over 22,000 sets of Dies.

Submit your blueprints and quantity requirements for estimates.

WROUGHT WASHER MANUFACTURING CO.
The World's Largest Producer of Washers
2212 S. BAY ST., MILWAUKEE 7, WIS.



CHECK THESE EXAMPLES OF AUTOMOTIVE APPLICATIONS FOR GAST UNITS

AIR MOTORS
Used on . . .
Crankcase Flusher (Air Motor & Gear Pump)
• • •
Stroboscopic Distributor Test Set (Reversible Air Motor)
• • •
Explosion-Proof Drive of Fuel Pump on Factory Production Line Carburetor Tests

VACUUM PUMPS
Used on . . .
Gasoline Heater Test Stand
• • •
Demonstrator for Simulating Auto Manifold Vacuum

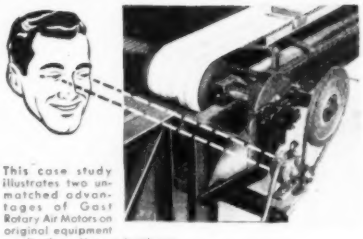
HAVE YOU A NEW APPLICATION?

PROBLEM: Drive a conveyor-belt carrying fragile material so that belt speed drops when drag of load increases.

SOLUTION: A Gast Air Motor maintains constant tension on material in process despite varying drag of load and belt r.p.m.

RESULT: This variable-speed drive reduces material spoilage—saves money.

UNUSUAL CONVEYOR-BELT PROBLEM solved with a variable-speed GAST AIR MOTOR



This case study illustrates two unmatched advantages of Gast Rotary Air Motors on original equipment applications. More advantages:

AIR MOTORS CAN'T BURN OUT—It's possible to stall them—but they can't burn out!

CAN'T SPARK EXPLOSIONS—No sparks—Gast Motors are explosion-proof.

GIVE VARIABLE R.P.M.—Controlled speed from 100 to 2,000—some to 6,000 r.p.m.

In many other ways, Gast Air Motors offer more—at less cost. Investigate now. "Air may be your Answer!"

WRITE TODAY!
Request your copy of GAST'S IDEA-CATALOG

GAST ROTARY — AIR MOTORS · COMPRESSORS · VACUUM PUMPS
TO ONE H.P. · TO 30 LBS. · TO 28 INCHES
GAST MANUFACTURING CORP., 129 Hinkley St., Benton Harbor, Mich.

M.G. Car Co. Ltd., Nuffield Exports Ltd., Abingdon-on-Thames, England.
MORRIS Motors, Ltd., Nuffield Exports Ltd., Cowley, Oxford, England.
RILEY (Coventry), Ltd., Nuffield Exports Ltd., Foleshill, Coventry, England.
ROLLS-ROYCE, Ltd. (Rolls-Royce, Bentley), London, W.1, England.
ROVER Company Ltd., Solihull, Birmingham, England.
SINGER Motors, Ltd., Small Heath, Birmingham, England.
STANDARD Motor Co., Ltd. (Standard, Triumph), Coventry, England.
VAUXHALL Motors Ltd., Luton, Beds, England.
WOLSELEY Motors, Ltd., Ward End, Birmingham, England.

FRENCH

BOTEL, Paris 18, France.
BUGATTI, Paris, France.
CITROEN, Paris, France.
CLAVEAU, Paris 8, France.
DELAGE, Paris, France.
DELAHAYE, Paris, France.
FORD, Poissy, S. & O., France.
GREGOIRE, J. A., Asnieres, Seine, France.
HOTCHKISS, St. Denis, Seine, France.
JULIEN, Paris, France.
MATHIS, France.
PANHARD & LEVASSOR, Paris, France.
PEUGEOT, Paris, France.
RENAULT (Regie), Billancourt, Seine, France.
ROSENGART, Paris 17, France.
ROVIN, Robert de, Paris, France.
SIMCA (Fiat), Nanterre, Seine, France.
TALBOT-DARRACQ, Suresnes, Seine, France.
WIMILLE, J. P., Paris, France.

ITALIAN

ALFA ROMEO S. p. A., Milano, Italy.
CISITALIA SOC. F. AZIONI, Torino, Italy.
FIAT S.p.a., Torino, Italy.
ISOTTA FRASCHINI, S. A., Milano, Italy.
LANCIA & C. S. A., Torino, Italy.

BRITISH DIESEL ENGINES

For details of their products see pages 174 and 175.

A.E.C. Limited, Southall, Middlesex, England.
ASSOCIATED British Oil Engines Ltd. (McLaren, Mirrlees, Petter), London, S.W.1, England.
BRISTOL Tramways & Carriage Co., Ltd., Brislington, Bristol 4, England.
COVENTRY Diesel Engines Ltd., Coventry, Warks, England.
CROSSLEY Motors Ltd., Stockport, Cheshire, England.
DENNIS Bros. Ltd., Guildford, Surrey, England.
FODENS Limited, Sandbach, Cheshire, England.
L. GARDNER & Sons, Ltd., Patricroft, Manchester, England.
LEYLAND Motors Ltd., Leyland, Lancashire, England.
HENRY MEADOWS Ltd., Wolverhampton, England.
MORRIS Motors Ltd., Nuffield Exports Ltd., Cowley, Oxford, England.
F. PERKINS Limited, Peterborough, England.
John I. THORNYCROFT & Co., Ltd., London, W.S.1, England.
TRANSPORT Vehicles (Daimler) Ltd., Coventry, England.

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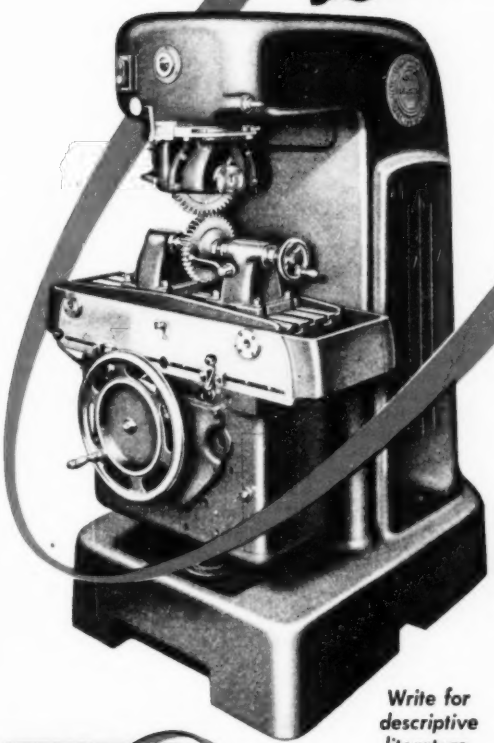
AUTOMOTIVE INDUSTRIES
REGULARLY

SHAVING ASSURES BETTER GEARS AT A GREATER OVER-ALL *Production Economy*



Write for descriptive literature.

This gear shaving machine, the first of its kind, was introduced 16 years ago to fulfill the urgent need of gear manufacturers for a means of correcting precision gears and gears produced to operate under critical loads and speeds—these corrections to bring them within required tolerances.

Today, it is being used by all the leading manufacturers in the automotive industry, the majority of gear jobbing shops and nearly all the machine tool builders.

One gear manufacturer says shaving has reduced rejects which formerly amounted to about 50% to none. Another says that shaved gears have cut operating power requirements approximately 20%.

Gear shaving eliminates the need for skilled machinists, regardless of the degree of precision required. Accuracy does not depend on the shaving machine operator. Shaving also makes it easier to turn out acceptable gears. The teeth of shaved gears have uniform accuracy and the characteristics of all the gears in any lot will be uniform.

SPUR AND HELICAL GEAR SPECIALISTS
ORIGINATORS OF ROTARY SHAVING AND ELLIPTOID TOOTH FORM

NATIONAL BROACH AND MACHINE CO.
3600 ST. JEAN . . . . . DETROIT 13, MICHIGAN

WORLD'S LARGEST PRODUCER OF GEAR SHAVING EQUIPMENT

Silicone News

DC

SILICONES

Increased Volume Cuts Cost of Silastic*

Design engineers weigh the properties and service life of a material against its price per pound. Sometimes there is only one material that will serve the purpose and price becomes relatively unimportant. That has been true of Silastic, the Dow Corning Silicone Rubber. But this initial market for Silastic has now become large enough to permit more efficient production and the opening of new markets through a price reduction of 20 to 45 cents a pound.

In the aircraft industry Silastic found a good initial market because it is the only resilient material that withstands hot oil and bath high and low temperatures. Typical uses are: sealing thermal anti-icing systems; gasketing engine rocker boxes; and flexible heating ducts.

Silastic tubing reinforced with glass cloth is used to seal heating and ventilating ducts operating at 350-400° F. in Consolidated's Vultee Convair-Liner, in jet type planes at temperatures of 350-450° F. and under pressures up to 150 p.s.i.

In the automotive industry gaskets are one of many applications for Silastic now under test.

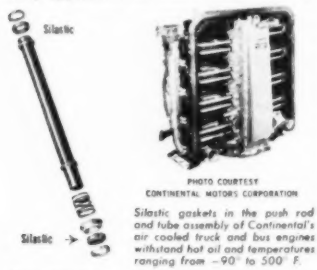


PHOTO COURTESY CONTINENTAL MOTORS CORPORATION

Silastic gaskets in the push rod and tube assembly of Continental's air cooled truck and bus engines withstand hot oil and temperatures ranging from −90° to 500° F.

Only Silastic is serviceable at temperatures in the range of −70° to −150° F. and upward of 500° F. It also has exceptional resistance to weathering and to many chemicals, excellent dielectric properties and water repellency. For more information phone our nearest branch office or write for pamphlet No. F5-M-2.

*TRADEMARK REG. U.S. PAT. OFF.

DOW CORNING CORPORATION
MIDLAND, MICHIGAN

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In Canada: Fiberglas Canada, Ltd., Toronto
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Dow Corning

FIRST IN SILICONES

Fluid Sealing

(*Continued from page* 238)

two rubbing surfaces are bound to heighten the development of friction in the sealing area. In this connection it will be realized that any oil seal is necessarily a compromise between loss to friction and perfect sealing, although development in late years has reduced the friction required to make an accurate seal. Another feature of dual seals which may add friction and heat is that one member is apt to be starved of lubricant by the other, more effective, member. An additional limitation is that, for perfect dirt exclusion, the auxiliary member generally is made of a porous material which tends to collect abrasives into itself. This, at times, may cause

Fig. 8—Rubber-coated springless synthetic seal.

shaft wear, and it is often necessary to harden shafts where auxiliary members are used. Normally, oil seals of the newer low friction synthetic type can operate almost indefinitely on soft shafting, if minimum abrasive is present, without shaft wear.

End Type or Face Seals. The primary reason for the use of these relatively expensive seals is to reduce torque below even the low standards now available in the less expensive types of shaft seals.

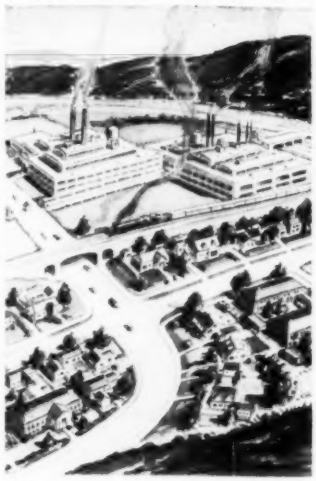
The face seal inherently requires more parts, more careful designing and finish, careful study of the mating face under a specific set of operating conditions, and always requires more expensive arrangement and machining of the mechanisms where the seal is to be installed.

These seals are useful in pump applications where a wide range of industrial fluids is employed, and where the seal must have extremely low starting torque and must last for extreme periods without service. They have found application in torque converters, washing machines and similar uses. They have a further advantage in that they can be designed to withstand temperatures of 600 F and above.

At this point it seems appropriate to reiterate that a well made standard type shaft seal, with a proper selection of sealing materials, very often will perform as well as, or better than, these more complex and more expensive seals. Again and again, we have seen these complex sealing mechanisms used unnecessarily.

Special Type Seals. These seals fall into two categories, those with obvious special arrangements such as external flanges, shoulders, etc., and those which are specially designed internally and/or with regard to size and shape. For the purpose of this article, only special seals in the latter category need be considered. Such seals cover a wide range of specials, largely involving the use of effective syn-

(*Turn to page* 294, *please*)



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thetic material, synthetic rubber being a much more flexible design medium than leather, which usually must be held to rather rigid form. Thus, by using a synthetic sealing area bonded to a metallic member, we are able to considerably reduce design costs on a mechanism and more readily adapt the seal to the design.

Special seals find use in applications where limitations as to area or other factors make it impossible to adapt seals of standard sizes, shapes or designs. For example, a manufacturer may end up his unit with a stamping or other type of closure to which a sealing member is attached. In another case, a manufacturer may have an area so constricted as to prohibit the use of the regular round seal, bolted or pressed on, and require the application of specially shaped sealing members to clear his mechanism. In other cases, extreme flexure or extreme runout may be required, and one or more convolutions can be made in the sealing member to take care of the special needs. Obviously, it is impracticable to enumerate all of the conditions which may require the use of special seals, but these few examples will serve to illustrate the methods by which such conditions can be met and overcome with the use of flexible synthetic sealing material.

Major Features and Functions Oil Seal Design

From the foregoing discussion it will be realized (1) that a great many factors enter into the design and application of oil seals and (2) that a great deal of experience has been gained, and knowledge accumulated, over the years in dealing with these factors and meeting the problems presented. In this connection, a brief recount of the major features and functions of oil seal design may be of interest to the reader.

Fig. 9—Seal combining two rubber members. One is spring loaded and other springless.

Speed and Temperature. A study of these factors is of importance when a new application is contemplated. This has become especially true in recent years since the higher shaft speeds and greater operating temperatures of modern mechanisms have intensified the problem of efficiently retaining lubricant around bearings. Today, designers and

(*Turn to page 296, please*)

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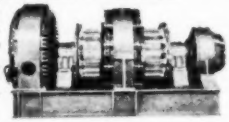

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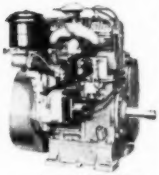

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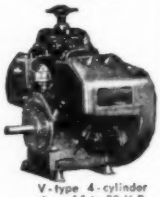

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manufacturers often are called upon to supply oil seals for shaft speeds exceeding 8000 to 10,000 rpm. Even some automotive oil seals are required to withstand 5500 rpm with surrounding ambient conditions from 180 to 200 F.

As previously indicated, the introduction of synthetic rubber compounds and new developments in leather impregnation have given engineers materials with which to meet the challenge of higher speeds and temperatures. However, in any study of efficient sealing at maximum conditions, the size-speed equation of the shaft merits consideration.

In terms of peripheral speeds in feet-per-minute, 2000 to 2400 fpm was once considered the maximum. Today many applications operate with peripheral speeds ranging from 3500 to 4000 fpm. Shaft fpm of this nature becomes a governing factor, around which the available sealing materials must be balanced with the width of the sealing surface, surrounding temperatures, proximity to the bearing, and whip and runout conditions. Here is a useful rule of thumb for designers wishing to operate a seal at 3000 rpm or above: Surrounding temperature not over 200 F; Runout or eccentricity not over .010; Shaft surfaces finished to not over 20 rms.

It is also desirable to avoid shaft whip and jump by mounting the seal close to the bearing; and for best results, the seal should be relieved so no pressure can build up in the bearing area. The ID-OD relationship of the seal itself should be sufficient for maximum cooling.

Advances in sealing knowledge and technology have provided seals which today offer performance capabilities far exceeding the foregoing requirements. In the field of leather seals, for example, improvements in impregnation methods have produced seals capable of extended operation at temperatures as high as 250 F, while synthetic rubber seals operate successfully at temperatures up to 325 F. *Eccentricity, Whip and Runout.* Shaft eccentricity, misalignment, momentary whip and end play are conditions present in varying degrees wherever shafts turn. These conditions create basic oil sealing problems. But proper oil seal design can and does solve these problems and protect the bearings. Usually, when these conditions are severe, specially-designed spring loaded oil seals are indicated.

Tests over a period of years have indicated that properly designed synthetic rubber seals, with correct spring tensioning, will operate efficiently despite eccentricities reaching .030 indicator at 4000 rpm. Here it is most important that flexibility of the sealing member be balanced exactingly with the proper spring tensioning. However, both life expectancy and degree of sealing suffer proportionately with the rise in eccentricity. The lower the eccentricity indicator reading, the longer the life and the better the sealing.

Actual misalignment of meeting parts in a design has a slightly different effect

(*Turn to page* 298, *please*)

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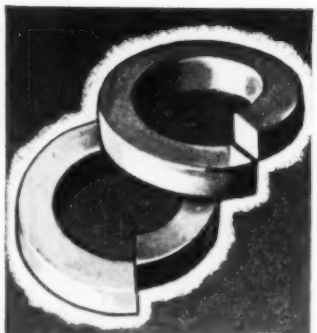

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on oil seals than eccentricity. Here utmost flexibility of the sealing member is essential, and again, special designs are recommended. Good sealing has been achieved on long test runs where misalignments are as high as .035 in. But surrounding conditions should be the best possible, and the seal so designed that it may operate efficiently in an off-center position.

The momentary whip or misalignment which occurs in flexible crank or drive shafts presents still another oil seal problem. Highly flexible oil seals, capable of efficient operation despite steady eccentricity or misalignment, sometimes allow seepage under severe momentary whip conditions. Special oil seal designs using heavier spring tensioning are indicated; but if tensioning is not precisely correct for the job, seal life will suffer.

Shaft end play can be compensated for in the oil seal design by stiffening the seal to avoid buckling the flange, and adjusting spring tension to overcome seepage during end-play movements. Here again, a special design of spring-loaded seal is recommended for maximum oil sealing efficiency.

In all the above cases, greater oil seal life and performance will result when conditions are held within the following limitations:

Eccentricity (runout)	Not over .005 in.
Misalignment	.005 to .010 in.
Shaft End Play (thrust)	Not over 1/32 in.

Severe momentary whip can often be modified by placing oil seals close to

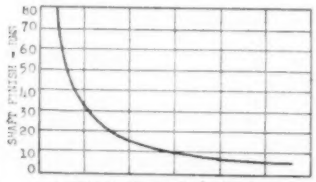

Fig. 10—Relationship of shaft finishes to oil seal life.

bearings; using sufficient section in the shaftings, and increasing the number of bearings employed.

Correct Shaft Surfaces Essential. Oil seals perform best and last longest on shafts of maximum hardness and smoothest finishing. Seal performance depends on these two factors, when other conditions such as speed and temperature are equal.

In many production applications, however, optimum hardness and smoothness may be impractical. Also, on many slow-speed, wide-tolerance mechanisms, a polished shaft may not be necessary or desirable.

Tests conducted over many years' time have shown RMS finishes of between 15 to 25 to be a practical compromise for most industrial applications. Such a

(*Turn to page* 300, *please*)

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finish can generally be obtained by production methods without prohibitive cost. During tests, seals on shafts of this finish have operated continuously up to 12,000 hours at high speed without evidence of serious leakage.

More finely finished shafts, of course, permit still greater seal performance. On test shafts polished to 5rms, National oil seals have been continuously operated at 4000 rpm for several years—many times the life expectancy of any mechanical equipment. On shafts finished only to 150 rms, operating at 4000 rpm, similar seals may have a life expectancy of as little as a few months, or even weeks. (A rough relationship of shaft finishes to seal life is shown in Fig. 10.)

Under ideal conditions, where shaft speeds are slow, where oil is properly filtered and dust excluded, seals will operate almost indefinitely on shafts of cold rolled steel.

In many cases, however, some abrasive material is turned into the sealing area. Shafts therefore should be of a hardness (at least locally) compatible with severity of the abrasion present. Under severe conditions of abrasion, both the seal area and bearing area should be hardened locally. A typical application in which such conditions are found is the front end of automotive crank shafts. Another is the driving mechanism of heavy earth-moving, agricultural or construction equipment.

Pressure, Abrasive and Other Conditions. Pressure and abrasive conditions are other factors which require study in the application of oil seals, either standard or special design. In most average cases standard seals are available, or can be readily modified, to meet the conditions. Under extreme conditions of these kinds, as of other kinds, it is necessary to create special designs incorporating special combinations of materials and/or other features.

It will be realized there are a great many other unusual conditions which are not covered in the foregoing discussion. For example, there may be installation problems, extreme corrosive conditions, service problems, and a host of other factors that have bearing on the final design.

Wealth of Background and Know-How Developed. As a result of the practical engineering, production and other pertinent experience gained in many years of dealing with all factors involved, a storehouse has been created not only of information but also of designs, patterns, improvements, tools, and of standard sealing units which meet many, if not all, of the numerous and varied conditions encountered in the sealing industry. This, in fact, is the main point of this article: Developments affecting the unitary type seal have kept abreast of the steady increase in complexity, speed, temperature, etc., which has marked the modern trend in machinery and equipment and which, at the same time, has tended to increase sealing problems.

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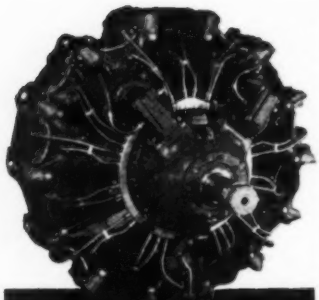

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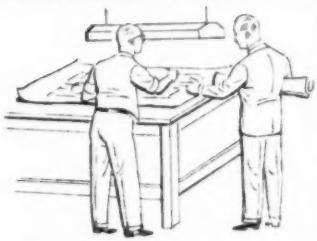

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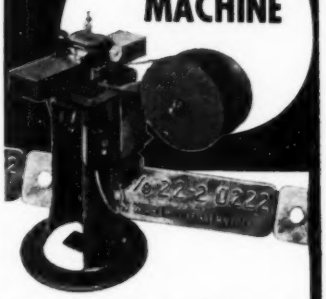

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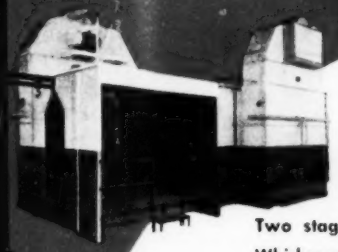

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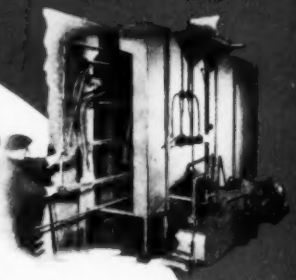

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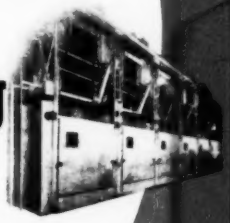
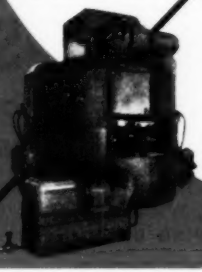


Battery of large direct gas fired batch-type core baking ovens in large midwestern foundry—heaters located on overhead platform.

washing



A 12 position rotary indexing power spray-washer recently developed for preparing inside surface of television tubes—entire unit wholly safeguarded.

ENGINEERED to YOUR particular NEEDS

ALTHOUGH all the components shown above have their own particular design criteria—many problems enter into their assembly into a COMPLETE FINISHING SYSTEM—loading stations, methods of handling, cooling times, manual and automatic transfers are but a few of these problems. We are particularly proud of our ability not only to design and manufacture the units but to combine them into well functioning systems.

see our CATALOG in SWEET'S FILE MECHANICAL INDUSTRIES

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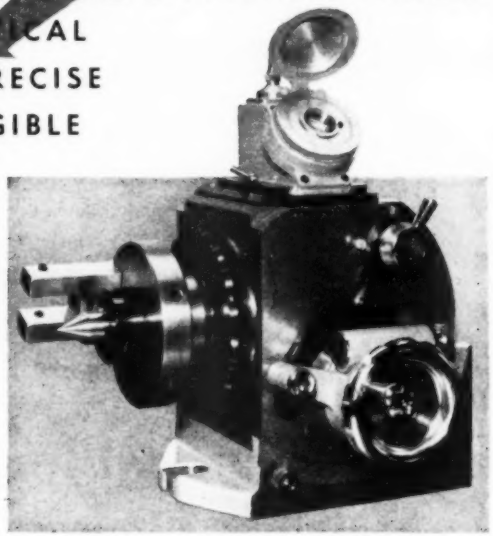
"WORK WITH A HEAD THAT IS AHEAD"



F. T. GRISWOLD Manufacturing Co.
WAYNE, PENNA. Wayne 0341

CIRCULAR #A.I.

It is believed that industry is not generally conscious of the fact that such a wealth of background and know-how has been developed, not only by continuous research and testing in exceptionally well equipped laboratories, but also by a tremendous amount of practical field work. As in many similar cases, the problems themselves—growing largely out of the more general use of anti-friction bearings and more complex mechanisms—have fathered the solutions.

In closing, I should like to again impress this thought on the minds of readers: A great many of the sealing problems which would appear to involve complex engineering, designs and mechanisms, might easily be covered by existing knowledge and materials, and even existing tools, with a corresponding reduction in the time and expense of accomplishing the objective.

To Hold Packaging Exposition in Detroit from Oct. 4-7

The Society of Industrial Packaging and Materials Handling Engineers, National Professional Group, has announced that the Fourth Annual Industrial Packaging and Materials Handling Exposition will be held in Detroit, Mich., from Oct. 4-7, 1949.

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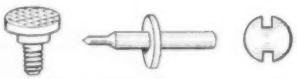
SPRINGS of only the best quality should go into automotive equipment. When a car stalls on the highway, everybody from the car manufacturer down shares the blame! If in doubt about how to meet your automotive spring requirements, our Engineers will gladly help, if you will describe your problem or send us your blue prints.



SCREW MACHINE PRODUCTS — Foregoing applies largely to the screws, nuts, turnings, pins, knobs, and the numerous other parts made on screw machines; and on this we offer you our engineering service if you wish it.

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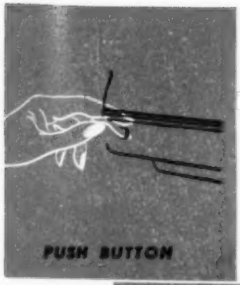

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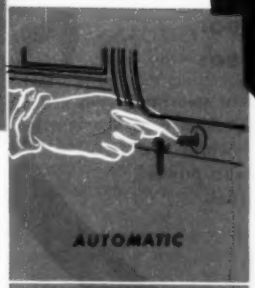

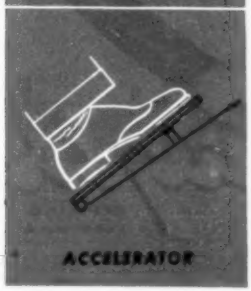

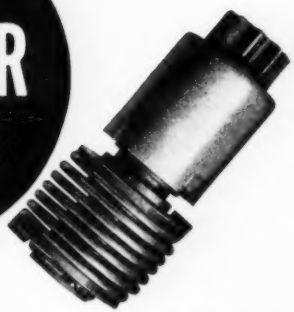

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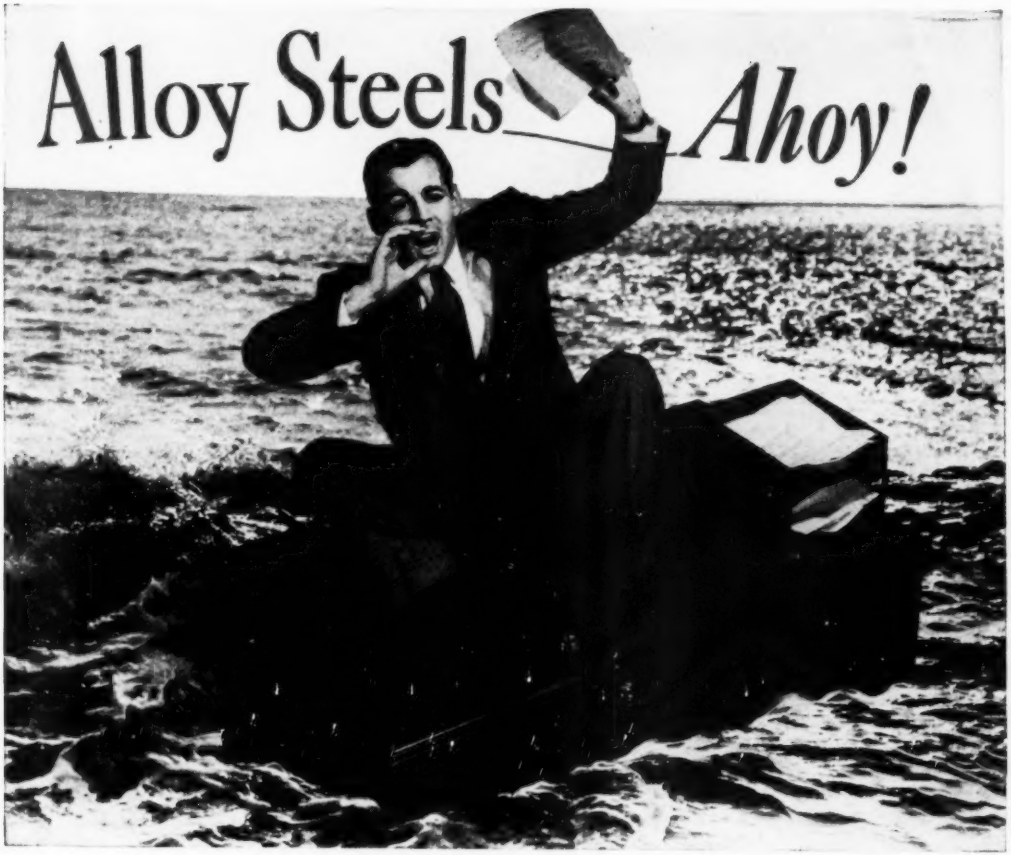

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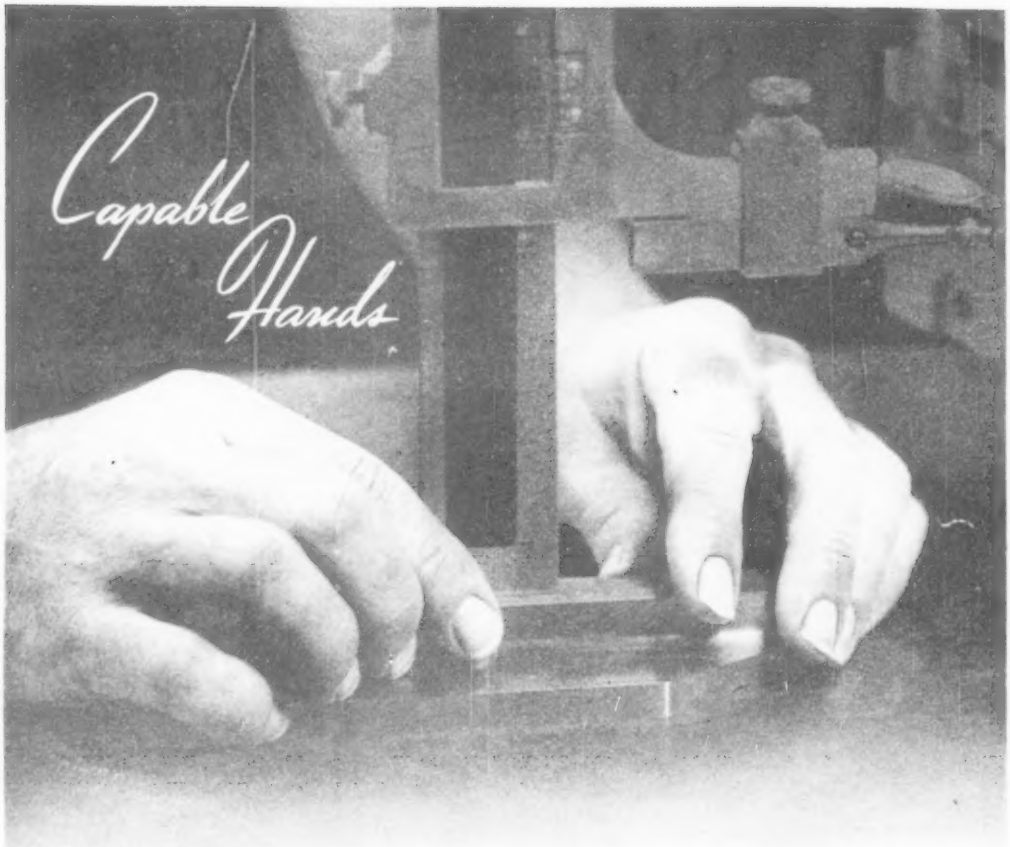

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Permite Engineers and Metallurgists are able to satisfy the most rigid requirements of automotive engineers for a piston test-controlled to their precise specifications . . . or to cooperate in problems of piston design.

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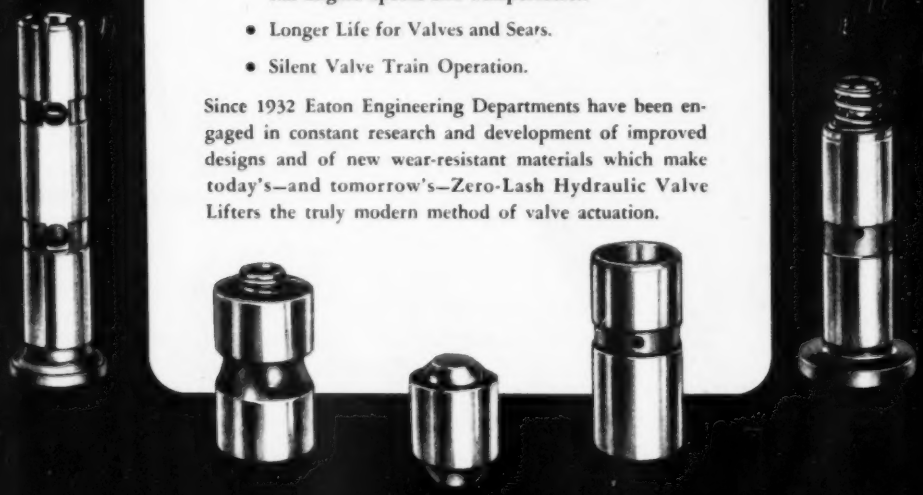

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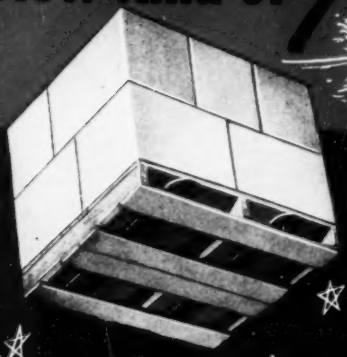

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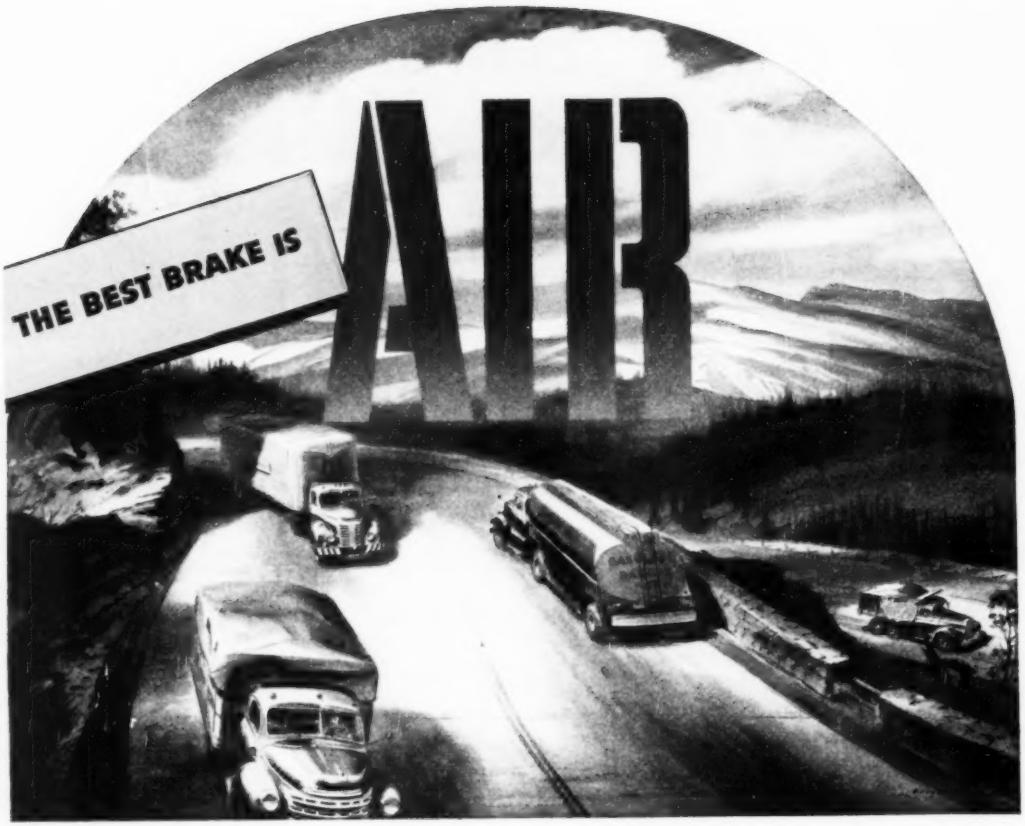

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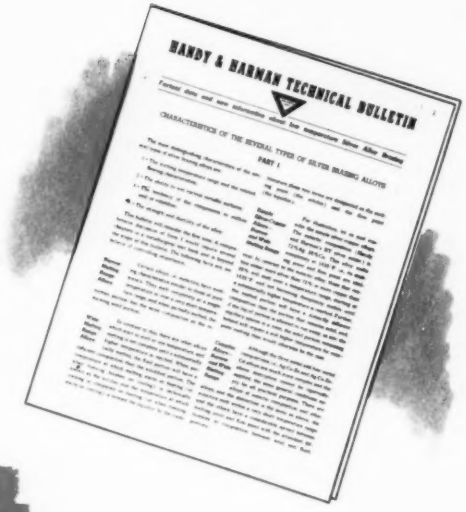

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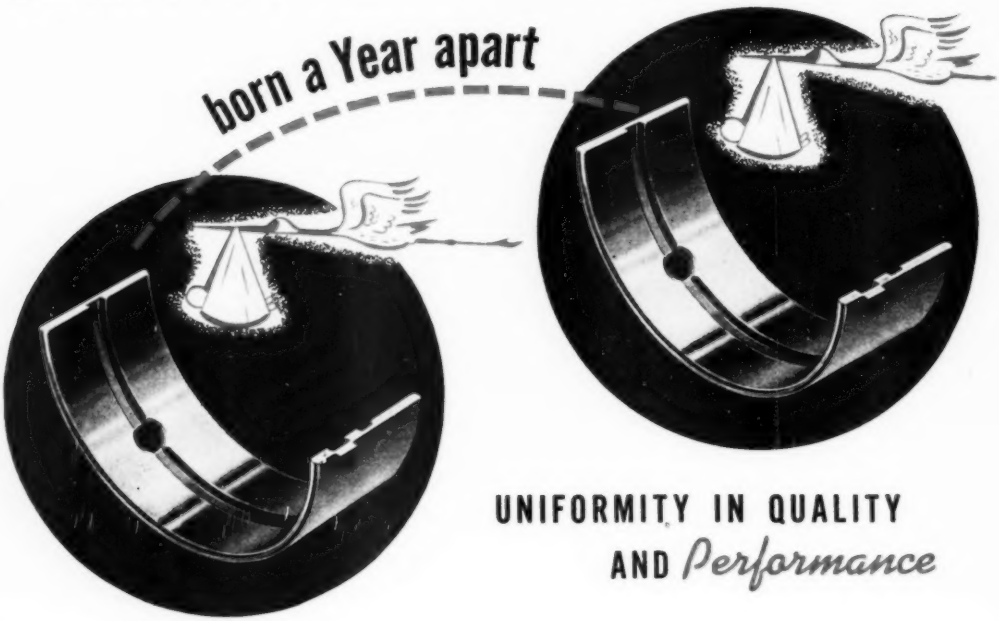

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Each went through a total of 20 precise manufacturing operations from the sintered strip to the final overplating. In processing they received a total of 35 setup and inspection measurement checks. Eighteen additional checks included analysis, temperature controls, special and visual inspections.

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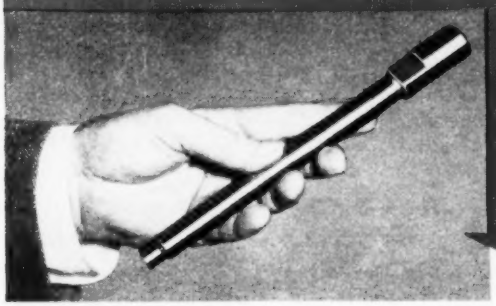
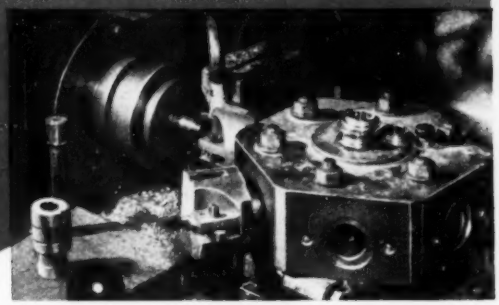


"Doubled production! Held costs down despite rising wages! Savings made in the machining of this one part paid the entire cost of installing the plan!" Large midwestern manufacturer.



"Assures maximum tool economy and accurate grinding of intricate form tools so important . . . in a highly competitive field." Top-ranking Detroit manufacturer.

Now! . . . get even greater savings from your use of carbide tools!

NOW it's ready for *your* plant!

A plan that combines *all* the elements of successful, efficient use of carbides by many prominent manufacturers!

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And "Triple C"—Coordinated Carbide Control—can be put into effect by your own men.

The results described at the top are *typical*. Names will be furnished on request.

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It's ten-to-one that the "Triple C" Plan can help lower your break-even point through greater savings. Write today for the free booklet describing the plan in detail. It's available to management executives of manufacturing companies. No cost or obligation.

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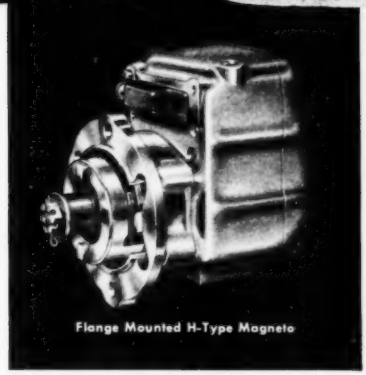
BENDIX-SCINTILLA

H TYPE MAGNETOS...

Base Mounted H-Type Magneto



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- Constant spark over entire speed range
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NEW C-D Silicone Dilecto withstands an inferno of heat and electricity

to improve product performance for you!

There are three new grades of C-D Dilecto* that can withstand temperatures as high as 250°C. They are chemically inert, silicone-glass laminated plastics that offer exceptionally high heat resistance and good arc resistance, extra strength, and positive moisture resistance! At Continental-Diamond we've literally lived and worked with Silicone Dilecto—perfecting it to a point where we believe it can be highly useful in helping to solve your production problems — and improve product performance.

your partner in producing better products

And this remarkable plastic is but one of many in the C-D family. They provide practical combinations of mechanical, electrical, and chemical properties—structural strength, light weight, positive moisture, heat and corrosion resistance. In hundreds of plants, C-D Plastics—Fibre, Vulcoid, Dilecto, Celoron, and Micabond—offer proof that it pays to see C-D first in your search for the right plastic for the job. For interesting, useful information on Silicone Dilecto, and other C-D high strength plastics, call or write your nearest C-D office, soon.

*Dilecto GB—112—S
Dilecto GB—128—S
Dilecto GB—261—S

DE-2-49

BRANCH OFFICES: NEW YORK 17 • CLEVELAND 14 • CHICAGO 11 • SPARTANBURG, S. C. • SALES OFFICES IN PRINCIPAL CITIES
WEST COAST REPRESENTATIVE: MARWOOD LTD., SAN FRANCISCO 3 • IN CANADA: DIAMOND STATE FIBRE CO. OF CANADA, LTD., TORONTO 8

Continental-Diamond FIBRE COMPANY

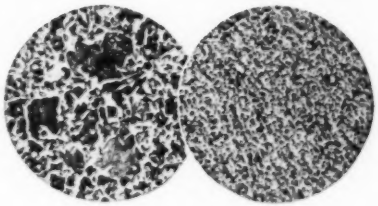
Established 1895..Manufacturers of Laminated Plastics since 1911—NEWARK 2 • DELAWARE

YOU CAN DEPEND ON

VANADIUM

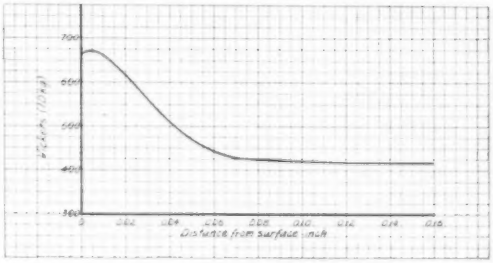
to give you grain size control, high performance, and ease of processing

GRAIN SIZE is refined by the addition of vanadium, the balance between strength and toughness is improved, and greater uniformity is promoted between transverse and longitudinal properties.



0.34 C 0.34 C, 0.20 V

HIGH PERFORMANCE follows the use of vanadium in constructional steels. In carburized parts, for example, the well-integrated bonding between case and core, inherent in vanadium carburizing steels, assures excellent shock-resisting properties and maximum service life.



Hardness penetration graph of Chromium-Vanadium A 6120 steel, with a light case (0.80 –0.85% carbon) in outer .010 inch

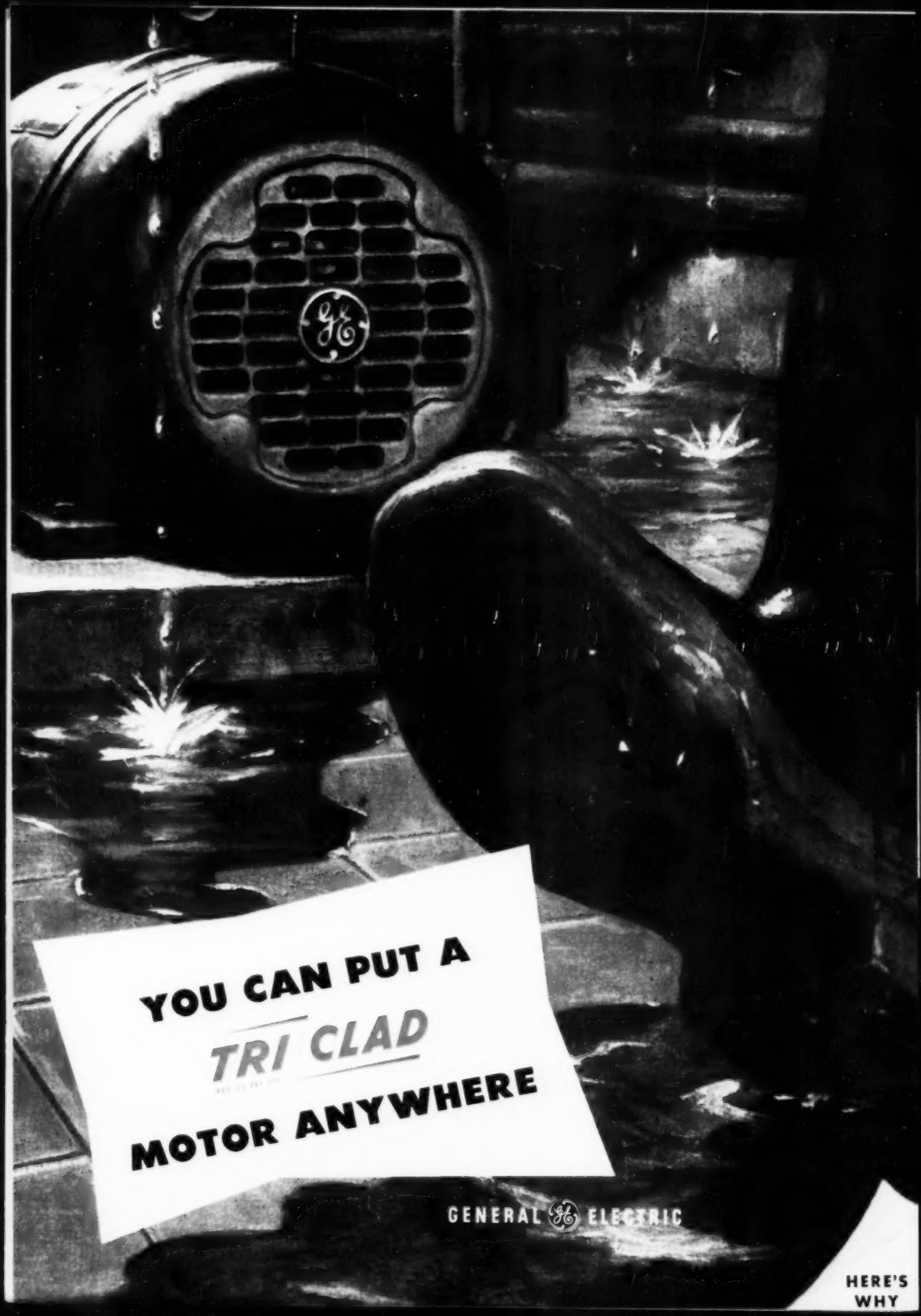
EASE OF PROCESSING—Uniformity of vanadium steels from heat to heat, with easy and uniform response to thermal and mechanical treatments, brings large compensation—savings far over-shadowing differences in initial materials costs.

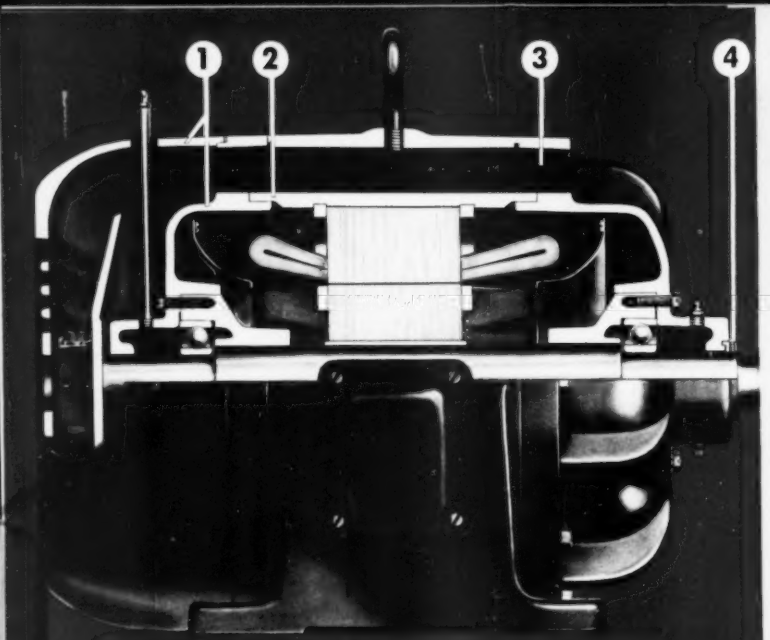
Our metallurgists will be glad to assist you in the application of vanadium to meet your requirements.

MAKERS OF FERRO-ALLOYS — VANCORAM — CHEMICALS AND METALS

VANADIUM CORPORATION OF AMERICA

420 LEXINGTON AVENUE, NEW YORK 17, N. Y. • DETROIT • CHICAGO • CLEVELAND • PITTSBURGH


YOU CAN PUT A
TRI CLAD
MOTOR ANYWHERE
GENERAL ELECTRIC
HERE'S WHY



The standard totally enclosed Tri-Clad features a *cast-iron* double-wall structure (1) that keeps outside air from electrical operating parts . . . machined-fit end shields (2) . . . large air passages (3), easy to clean . . . rotating labyrinth seals (4) that keep foreign matter from working in around the shaft. Note, too, the new corrosion-resistant G-E Textolite cooling fan is now standard on all 1- to 15 hp TEFC Tri-Clads.

You can put a TRI CLAD motor anywhere

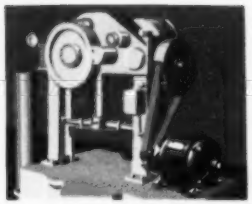
YES SIR! The standard *Tri-Clad* open motor is a *cast-iron, dripproof* motor you can put anywhere that *any* open motor can be used—and in a lot of places where other open motors couldn't take it.

What's more, for the really dirty jobs—where air is laden with dust, or corrosive fumes—where metal chips and cutting fluids abound—the Tri-Clad totally enclosed motor gives you more protection, *inside and out*, than any other make of motor you can buy.

1,720,000 Tri-Clad motors, operating in every conceivable kind of plant, prove the far-reaching advantages of cast-iron construction . . . superior resistance to corrosion . . . rigidity that makes for permanent shaft alignment . . . inherent damping action that minimizes noise and damaging vibration. These motors prove, too, that Tri-Clad double-end ventilation simply has no equal for prolonging an open motor's useful life. Providing high-volume, relatively low-velocity cooling, this ventilating system keeps Tri-Clad motors *uniformly* "air-conditioned".

WANT MOTORS THAT CAN REALLY TAKE ABUSE? Tri-Clad motors in nearly all types and ratings are available for **IMMEDIATE SHIPMENT.** Contact your nearest G-E Office or write *Apparatus Dept., General Electric Company, Schenectady 5, N. Y.*

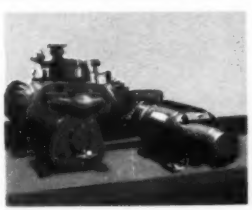
There's a Tri-Clad motor for every industrial need!



G-E open (dripproof) induction motors for constant-load, constant-speed applications. From 1 to 2000 hp.

G-E totally enclosed motors for outdoor operation, in abrasive dusts, or corrosive fumes. From 1 to 1000 hp.

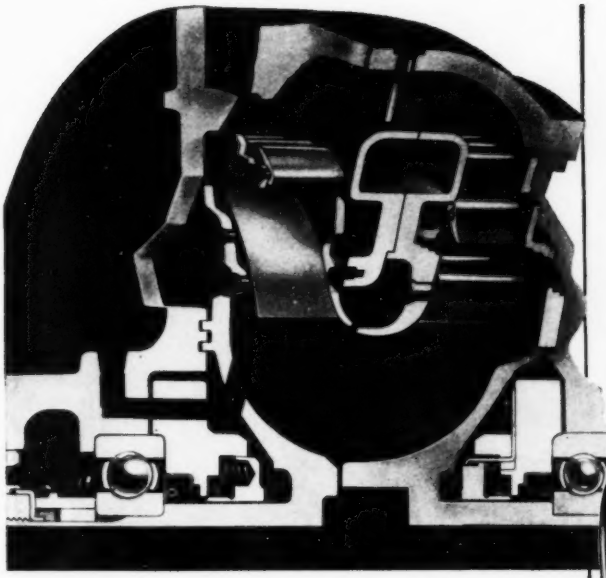
G-E gear-motors for low-speed operation. A normal-speed motor with built-in reduction gear. From ⅛ to 75 hp.



G-E synchronous motors for maintaining exact speeds or for correcting power factor. From 20 to 1000 hp.

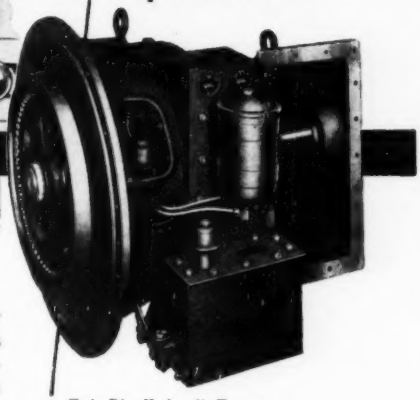
YOU CAN'T BEAT TRI CLAD EXTRA PROTECTION

GENERAL ELECTRIC



Sectioned view of Twin Disc Hydraulic Torque Converter

Greatest · Overall TORQUE Multiplication



Twin Disc Hydraulic Torque Converter (Lysholm-Smith Type)

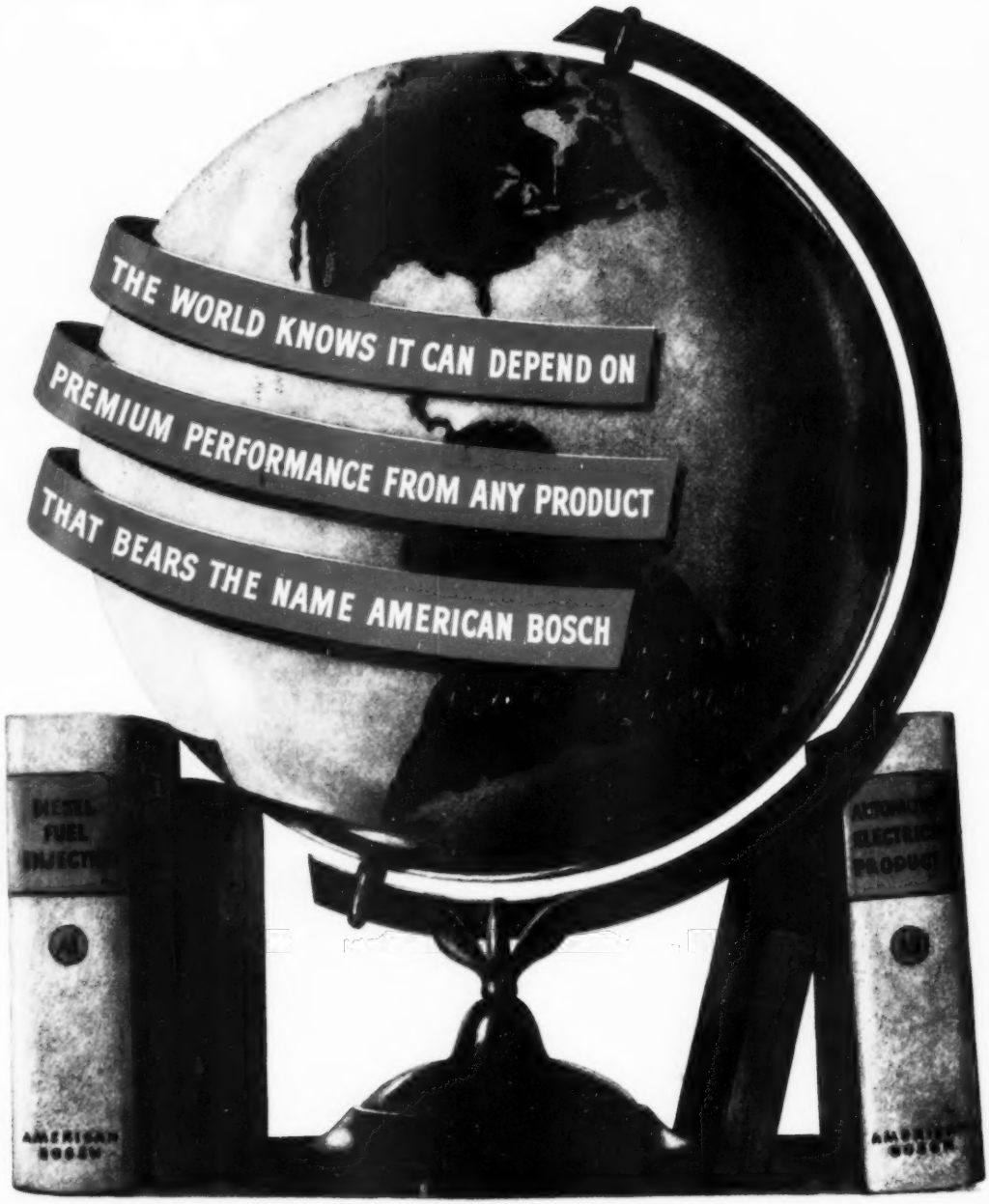
When considering power transmission units for equipment with high torque demands, designers turn naturally to Twin Disc's Lysholm-Smith Hydraulic Torque Converter, because it offers the greatest overall torque multiplication of any unit made today.

The hydraulic circuit of Twin Disc's Converter consists of a centrifugal pump discharging through a *three-stage* turbine, with two reaction stages interposed between the turbine stages. Maximum torque is developed at output shaft stall and is approximately five times engine torque . . . maximum efficiency is attained at an output speed ratio of approximately .5.

To apply a Twin Disc Torque Converter to any engine and machine assembly, it is necessary to select a converter with a proper pump size to absorb engine hp over its complete operating range. The drive ratios in the machine must be properly selected to obtain maximum converter performance throughout the complete range of output shaft operating speed.

The Twin Disc Hydraulic Division offers assistance in solving your power transmission problems. Torque Converter models are currently available with horsepower ratings from 40-1000 hp. TWIN DISC CLUTCH COMPANY, Racine, Wisconsin (Hydraulic Division, Rockford, Illinois).

SPECIALISTS IN INDUSTRIAL CLUTCHES SINCE 1918

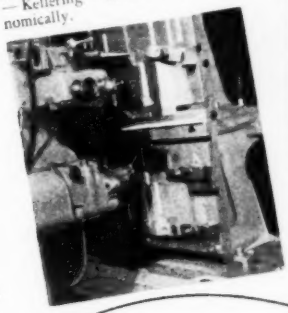


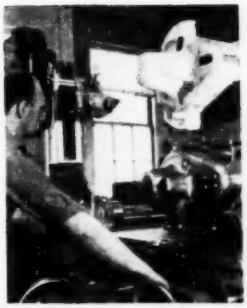
American Bosch

Factory in Springfield, Massachusetts • Service the Whole World Over

DIES

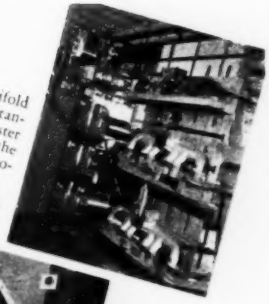
This is a forging die cavity for jet engine impeller blades. P&W Keller Machines cut thousands of forging dies, some simple and some very complex. Tracer-controlled milling — Kellering — does the job economically.





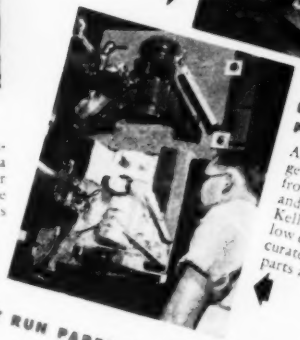
PATTERNS

Here are two metal manifold patterns being cut simultaneously from a wood master pattern. Kellering is the quick way to get into production.



MOLDS

This steel mold for a precision aluminum casting is being cut from a wood master. Plaster or any other readily worked material is suitable for the master form. Plastic molds are made the same way.

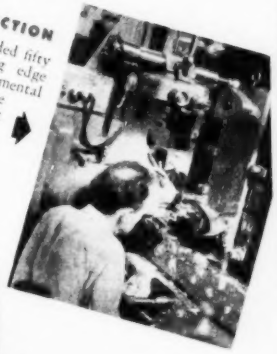


EXPERIMENTAL PARTS

An aircraft landing gear part being cut from a solid steel billet and a wood master. Kellering is the fast low cost way to get accurate finished test parts and pilot models.

SHORT RUN PARTS PRODUCTION

An aircraft company needed fifty magnesium wing leading edge segments for a new experimental plane. Angles and shape were complicated but Kellering solved it easily.



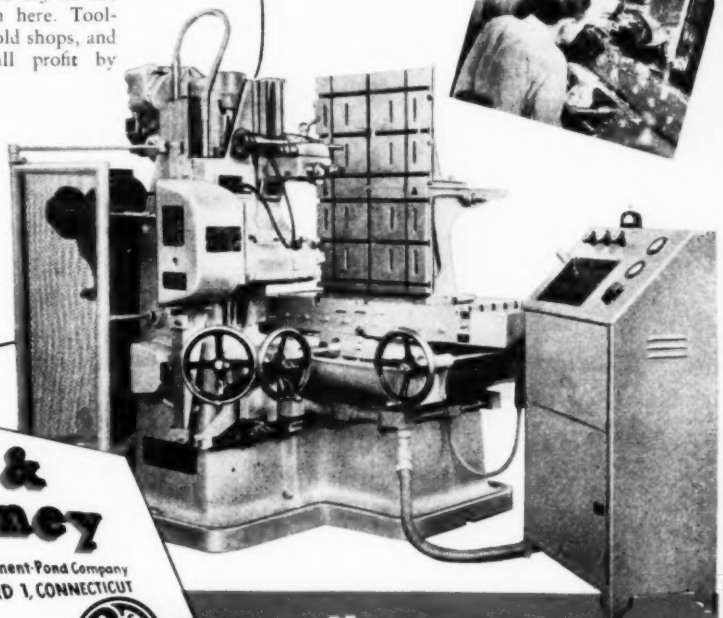
KELLERING

RINGS UP PROFITS

on ALL these DIFFERENT jobs

This is the Pratt & Whitney Keller, Type BL, that is duplicating and double-duplicating its original investment in short order. This one machine can handle *any* of the many kinds of work shown here. Toolrooms, tool and die shops, mold shops, and experimental departments all profit by Kellering.

It will pay you to look into the time and cost saving possibilities of Kellering. May we send you our latest Bulletin on the Type BL Keller? There is no obligation.



Pratt & Whitney

Division Niles-Bement-Pond Company

WEST HARTFORD 1, CONNECTICUT

Keller Machines

JMLeob-18

WHY *Federated* SOLDER?

Solders are all alike, you say? You're right! Basically, they are all alloys of tin and lead. BUT . . .

Tin and lead tossed together casually like coffee and cream do not consistently result in good solder. The alloying must be done scientifically, under controlled conditions, so that the solder you use melts uniformly at the same temperature . . . flows evenly . . . bonds permanently.

All Federated solders are manufactured under the strictest laboratory and production line controls. See Federated first for solders of all sizes and compositions—rosin core, acid core and solid wire solders; bar solders; body solders; pig, drop, foil, ingot, triangle, strip, wiping and segment solders.

Federated also produces brass and bronze ingot metals, die casting alloys, bearing metals, aluminum and magnesium alloys, zinc dust and fabricated lead products. 24 sales offices across the nation.

Federated METALS

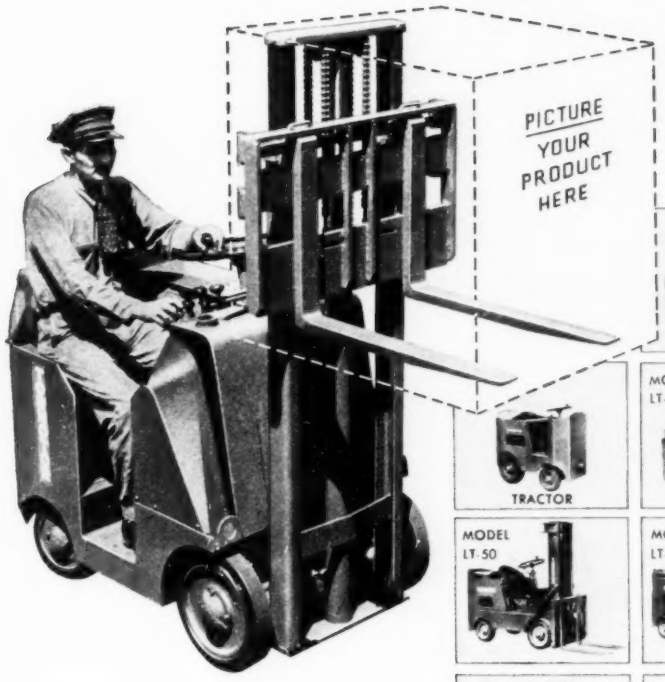
Division of American Smelting and Refining Company, 120 Broadway, New York 5, N. Y.

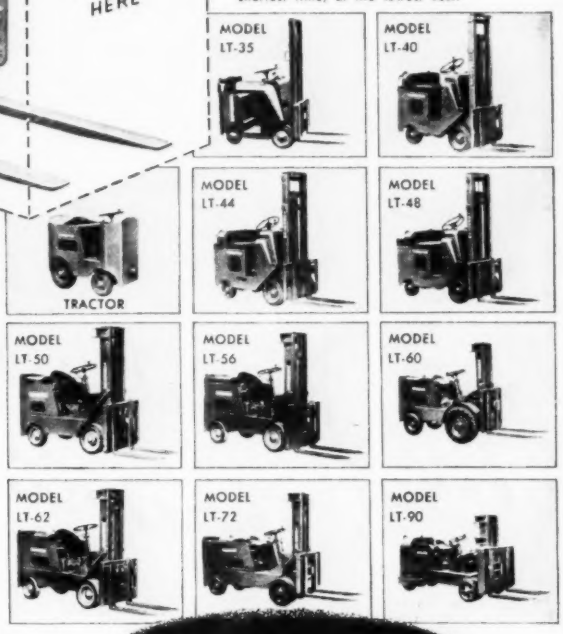
Get MAXIMUM PRODUCTION

from both men and machines with

TOWMOTOR MH*

*MH is MASS HANDLING—the systematic movement of the most units, in the shortest time, at the lowest cost.



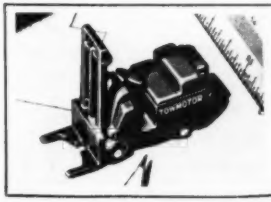


With Towmotor Mass Handling, men and production machines operate at peak efficiency. Maximum production at lowest cost is the result. Towmotor Fork Lift Trucks and Tractors, gasoline powered for full-time, full-power service, offer you every advantage and benefit of modern lift truck operation. There is a size for every type of plant, small or large. Numerous accessories and attachments further increase the adaptability of Towmotor Mass Handling to your particular handling job. Get maximum production at minimum cost all the way down the line. Use *Towmotor*, the Fork Lift Truck preferred by professional handlers everywhere.

TOWMOTOR
THE ONE-MAN-GANG

FORK LIFT TRUCKS *and* TRACTORS

RECEIVING • PROCESSING • STORAGE • DISTRIBUTION

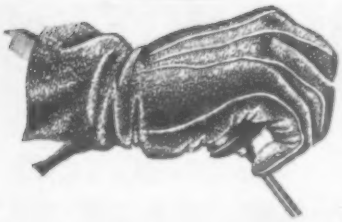


Redesign your plant layout in miniature . . .

Determine in advance how you can use Towmotor Fork Lift Trucks to best advantage. Send today for

MINIATURE MODEL
TOWMOTORS
actual scale ¼" = 1' $1.00 each

TOWMOTOR CORPORATION • Division 45 1226 E. 152nd St., Cleveland 10, Ohio • *Representatives in all Principal Cities in U. S. and Canada*



DRIVER

"...a box that shifts easy... one that doesn't wear me out or itself either."

OWNER

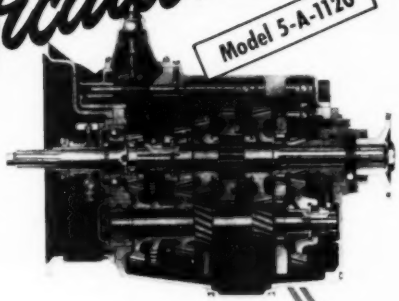
"...performance...higher average speeds with all the load the law allows."

MECHANIC

"...a transmission that doesn't give trouble...send it out and forget it."

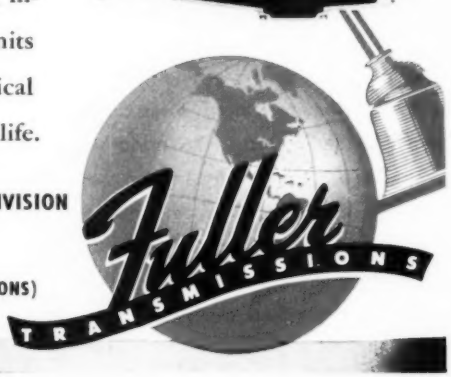
They wrote the Specifications

Model 5-A-1120



● Fuller Transmissions have proved on the toughest runs that they meet all the requirements of the "big three" of the trucking industry. These heavy-duty, high-capacity units are designed and built to insure economical performance, easy shifts, and long wear-life.

FULLER MANUFACTURING COMPANY, TRANSMISSION DIVISION
KALAMAZOO 13F, MICHIGAN
Unit Drop Forge Division, Milwaukee 1, Wisconsin
WESTERN DISTRICT OFFICE (SALES & SERVICE—BOTH DIVISIONS)
1060 East 11th Street, Oakland 6, California



BOWER BEARINGS ARE

SPHER-O-HONED

FOR GREATER PRECISION . . . SMOOTHER PERFORMANCE

Ask any automotive engineer. He'll tell you that bearing precision and smoothness go hand in hand—that greater precision means smoother, more dependable performance.

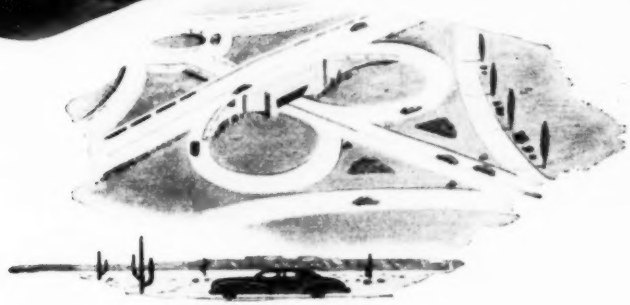
That's why the word SPHER-O-HONED is so important to you. It stands for significant design and engineering improvements—spherical roll-ends and cone flange, a large oil groove, and superior finish—that mean greater accuracy, less initial wear, better lubrication, and longer bearing life. It means lower installation costs too.

In many applications, Bower SPHER-O-HONED Bearings can be installed permanently—eliminating "running in" and costly "final" adjustment.

If you're looking for quiet, trouble-free bearing performance for your product, investigate Bower SPHER-O-HONED Bearings. They're your best bearing buy.

For more complete information, write for the new Bower engineering catalog.

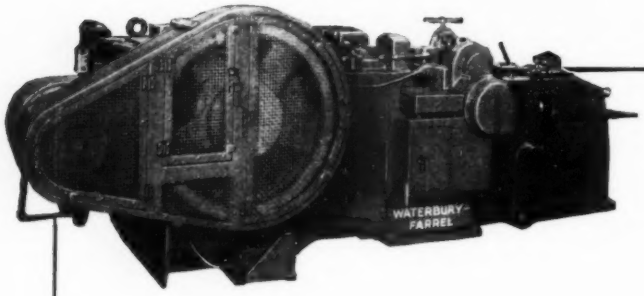
BOWER ROLLER BEARING COMPANY • DETROIT 14, MICHIGAN



BOWER

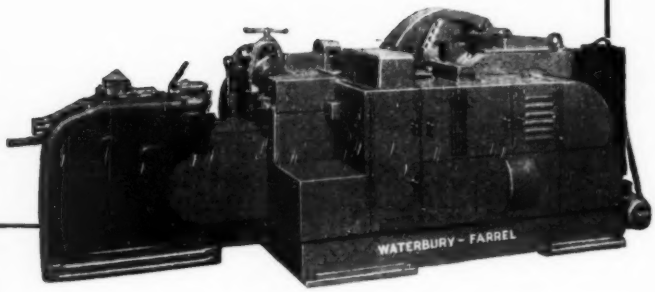
ROLLER BEARINGS

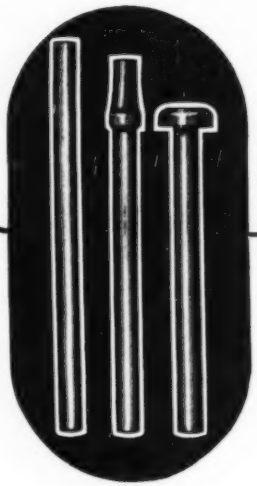
New WATERBURY "HI-PRO"
HEADS 150 ($\frac{1}{4}$" x 3") BLANKS PER MINUTE
From AJAX-HOGUE Drawn Wire



Waterbury "Hi-Pro" header with AJAX-HOGUE wire drawer attached.

Other side of same header showing AJAX-HOGUE drawer at left.





$\frac{1}{4}$" x 3" blanks drawn and headed on the machines illustrated.

● The New Waterbury-Farrel Hi-Pro solid die, double stroke crank header achieves a new high in fast, uniform cold heading of blanks to 3 inches in length. A most important contributing factor to this exceptional performance is the Ajax-Hogue drawer which provides the header with freshly drawn, clean, straight wire of unvarying accuracy. Ajax-Hogue wire drawers are built in five sizes with capacity from $\frac{1}{4}$ inch to 1 inch diameter to be used with every make of cold header. Write for bulletin No. 111 for more complete information.

THE **Ajax** MANUFACTURING COMPANY
EUCLID BRANCH P. O. CLEVELAND 17, OHIO
110 S. DEARBORN ST. CHICAGO 3, ILLINOIS
DEWART BUILDING NEW LONDON, CONN.

SCHWITZER-CUMMINS SUPERCHARGERS

POSITIVE DISPLACEMENT
...Sizes to Supercharge Engines 50 H.P. to 500 H.P. Rating — Pressure Ratios 2 to 1 Maximum.

- OIL PUMPS
- WATER PUMPS
- COOLING FANS
- SUPERCHARGERS
- VIBRATION DAMPENERS
- AUTOMATIC SHAFT SEALS

THIRTY YEARS of intensive work on the varied problems related to the development and manufacture of superchargers for all types of internal combustion engines has developed here at Schwitzer-Cummins Company a unique ability to select the best in type of equipment and the "know how" to apply it for the utmost in compactness, efficiency and reliability. Final unit production cost is our prime consideration at all times.

We shall appreciate the opportunity to study your supercharger requirements, either for a new engine design or to improve present performance. We can place at your disposal qualified technical experience and knowledge of proven and latest developments in this field. Our long service to the industry embraces the designing and building of superchargers and their drives for marine and stationary engines—for buses, trucks and locomotives—for earth movers, power generators, pumping, hoisting, and construction equipment and many specialized uses—gasoline and Diesel, two cycle and four cycle, large and small.

Illustrated here is an unusual combination of supercharger and water pump for a six cylinder, two cycle Diesel with automotive engine type bearings, pressure lubricated from engine oil pump.

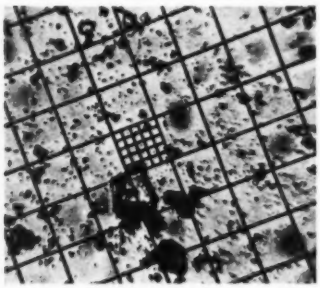
Whatever your requirement or application, we feel we have something for it. May we serve your needs?

ALL IMPORTANT PARTS
are manufactured in our own plants under direction of our supercharger engineers for full interchangeability and the utmost simplicity on service requirements.

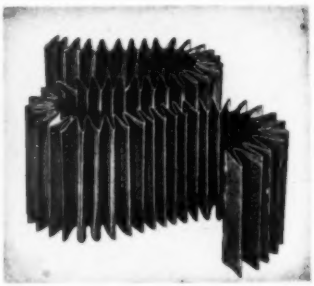
More power and improved performance from your engine with compactness, simplicity and low cost. Manufactured to our design or to suit requirements peculiar to your own.

SCHWITZER-CUMMINS COMPANY
1125 MASSACHUSETTS AVENUE • INDIANAPOLIS 7, INDIANA, U.S.A.

Here's why Purolator is standard on more engines than all other oil filters combined!



Filters Micronic Particles! In tests made by the Government on oil filters, with approved Test Dust containing graded dust ranging from one micron on up, Purolator filtered 97.8% on the very first pass-through.



5 Times Greater Filtering Area! The revolutionary accordion-pleated design of the Purolator Micronic Filter provides an area 5 times that of old-style filters. More than 10 feet of filtering surface in a 3⅜ inch diameter element!

PERCENTAGES BY WHICH PUROLATOR MICRONIC ELEMENT EXCELLED COMPETITIVE TYPES

COMPETITOR	IN AVERAGE DIRT RETENTION PUROLATOR LED BY:
A	199%
B	220%
C	113%
D	547%
E	164%
F	619%
G	255%
H	339%
I	318%
J	193%
K	237%
AVERAGE PUROLATOR SUPERIORITY	290%

Resists Crankcase Acids! Purolator's micronic element is made of cellulose specially impregnated with plastic. Its resistance to heat, warping, *and destructive crankcase acids* has been conclusively proved both in immersion tests (above) and in actual use.

Removes 200% More Abrasives! In competitive tests against comparable filters . . . Purolator led in average dirt retention by 290% (as shown above) because Purolator filters particles as minute as .000039 of an inch, and has greater filtering area.

and that's not all!

• Purolator not only protects engines by *removing* from the oil all the sludge and abrasives . . . it also *leaves* in the oil any additives placed there for greater lubrication efficiency. Other types of filters often remove these important additives.

To create additional acceptance for engines and vehicles equipped with "the most efficient oil filter" . . . Purolator has launched a huge new nationwide advertising and promotion campaign to both the public and the trade!

Purolator invites you to consult their heavily experienced engineering staff about your specific filtering problem. And we will also give prompt attention to your requests for additional data and technical information on the Purolator Micronic Filter.

PUROLATOR PRODUCTS INC.
Newark 2, New Jersey
and Windsor, Ontario, Canada

PUROLATOR
MICRONIC OIL FILTER
"FIRST IN THE FIELD OF FILTERING"

MEMO: Investigate Torque Converter Parts "Cast by Alcoa"

Have you investigated the advantages of Alcoa Aluminum Alloy Castings for fluid torque converter parts?

Their smoothness permits top efficiency. They have the strength to withstand high centrifugal stresses. They resist corrosion. Their fast heat transfer prevents hot spots. They machine fast.

Our engineers will welcome an opportunity to work with you. Contact your nearby Alcoa Sales Office. Or write ALUMINUM COMPANY OF AMERICA, 2110 Gulf Bldg., Pittsburgh 19, Pennsylvania.

Aluminum Castings by ALCOA

ALCOA ALUMINUM

SAND • DIE PERMANENT • MOLD •

Grinds both GEARS and SPLINES

3 Times Faster

than any previous machine of comparable capacity

• This combination gear and spline grinder is fast because of the short roughing stroke which means less carriage travel, a reduction in the total number of indices required and the cycling control that prevents a slowing of the machine cycle. This also permits one man to operate more than one machine.

On this combination machine the work reciprocates past the formed grinding wheel, which feeds down automatically each time the work reverses. This down feed becomes progressively smaller, at a predetermined rate, as the limit of the cut is approached.

Grinding continues on one group of teeth until the proper size is reached, after which the dresser moves into position for trueing the grinding wheel. On completion of all teeth the operator trues the wheel and completes the grinding operation in the conventional manner, indexing from tooth to tooth.

GEARGRIND
TYPE SG-10x48A

Features-

- Double column support for grinding wheel head.
- Automatic, adjustable grinding wheel feed.
- Automatic wheel feed for trueing.
- Automatically cushioned trueing position.
- Automatic lubrication of ways.
- Axial grinding wheel spindle adjustment.
- Work table speeds up to 70 ft. per minute.
- Control panel, with counters to adjust grinding cycle, interlocking safety features, very accessible mountings of push buttons and other controls.
- Long base eliminates work table overhang. New way guards.
- Simplified stroke adjustment.
- Adjustable work arbor supports facilitate loading.
- Recessed dogs and stops, for operator's safety.

For grinding involute gears and splines this machine can be equipped with the Geargrind Involute Trimmer. This has the capacity to true wheel from 32 to 4 diametral pitch. Gear diameters from ¼" R.D. to 10" O.D.

CAPACITY—SG-10x48A

Between Centers	Up to 48"
Spline OD	1" to 6"
Max. swing	12½"
Teeth	4 to 120
Face width	Up to 34"

Write for Literature

The GEAR GRINDING MACHINE COMPANY
DETROIT 11, MICH. U.S.A.

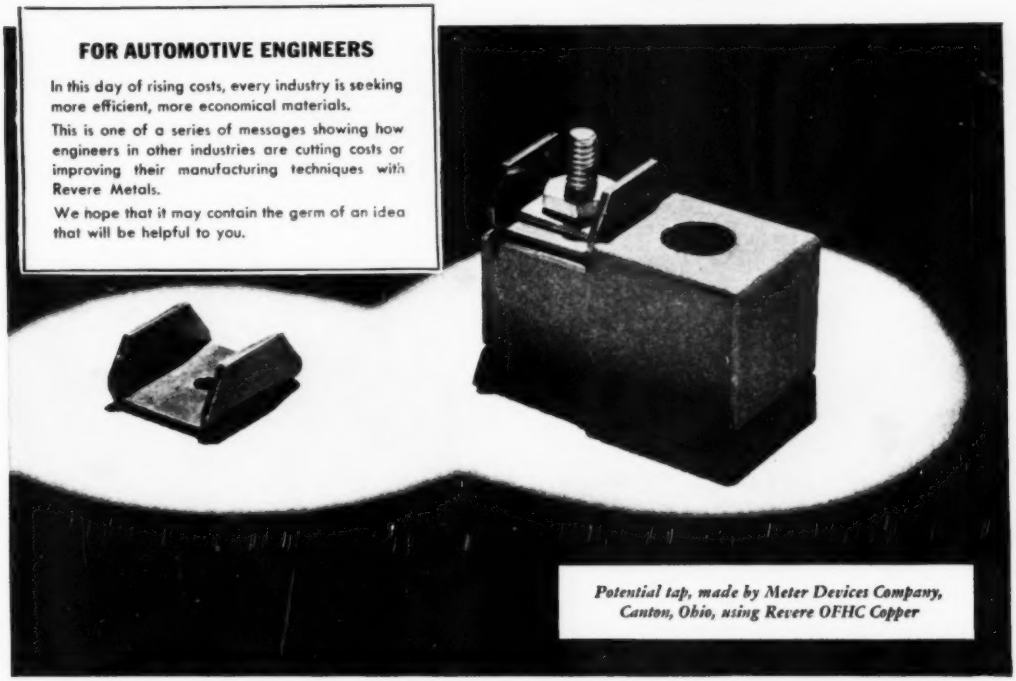
IT PAYS TO LOOK AT COST PER PART NOT PRICE PER POUND!

FOR AUTOMOTIVE ENGINEERS

In this day of rising costs, every industry is seeking more efficient, more economical materials.

This is one of a series of messages showing how engineers in other industries are cutting costs or improving their manufacturing techniques with Revere Metals.

We hope that it may contain the germ of an idea that will be helpful to you.



Potential tap, made by Meter Devices Company, Canton, Ohio, using Revere OFHC Copper

THERE'S certainly nothing complicated-looking about the small stamped channel section of .042" gauge copper shown in the accompanying illustration. And that's what makes this story all the more interesting.

It is told by Mr. T. J. Newman, Manager of the Meter Devices Company, Canton, Ohio.

"Even a relatively simple application can cause trouble," says Mr. Newman, "a lot of trouble—if you are not using exactly the right metal for the particular job.

"In our case the problem centered around this small stamped channel, originally made of electrolytic copper with a Rockwell B 35/45. The part is bolted to a porcelain base and mounted on the test panel in a standard electric meter box. Used on the service box for test purposes, it allows the connection of a small feed-in wire off the main lines to supply the potential coils in the meter.

"Sounds simple enough. Yet complicated trouble came quickly. It started with cracks in the bends. And that resulted in a high percentage of rejections, along with expensively close inspection.

"It was then that we called in the Revere Technical Advisory Service. Acting on their recommendation, we exactingly tested potential taps made of OFHC Copper with Rockwell B 49/50. Results were so satisfactory that we placed a considerable production order.

"In doing so we frankly paid a premium for OFHC. But that premium is much more than offset by our saving in scrap and the all-around reduction in costs. Our potential taps now have no more cracks in the bends—there are no rejections whatever—and expensive inspection has been eliminated."

Thus the Meter Devices Company has learned, by its own exacting tests, that the premium purchase of OFHC Copper is a real economy. Once again it is proved that the real guide to economy is the cost of the finished part, not the price per pound of the metal of which it is made.

This progressive company is only one of the many modern industrial organizations that have profited by calling in the Revere Technical Advisory Service. Perhaps you would profit too. We suggest that you ask the nearest Revere Sales Office for more information.

REVERE

COPPER AND BRASS INCORPORATED

Founded by Paul Revere in 1801

230 Park Avenue, New York 17, New York

Mills: Baltimore, Md.; Chicago, Ill.; Detroit, Mich.; New Bedford, Mass.; Rome, N. Y.—Sales Offices in Principal Cities, Distributors Everywhere

ENGINE SPEED CONTROL

MILES-PER-HOUR RESTRICTION

OVER-SPEED PROTECTION

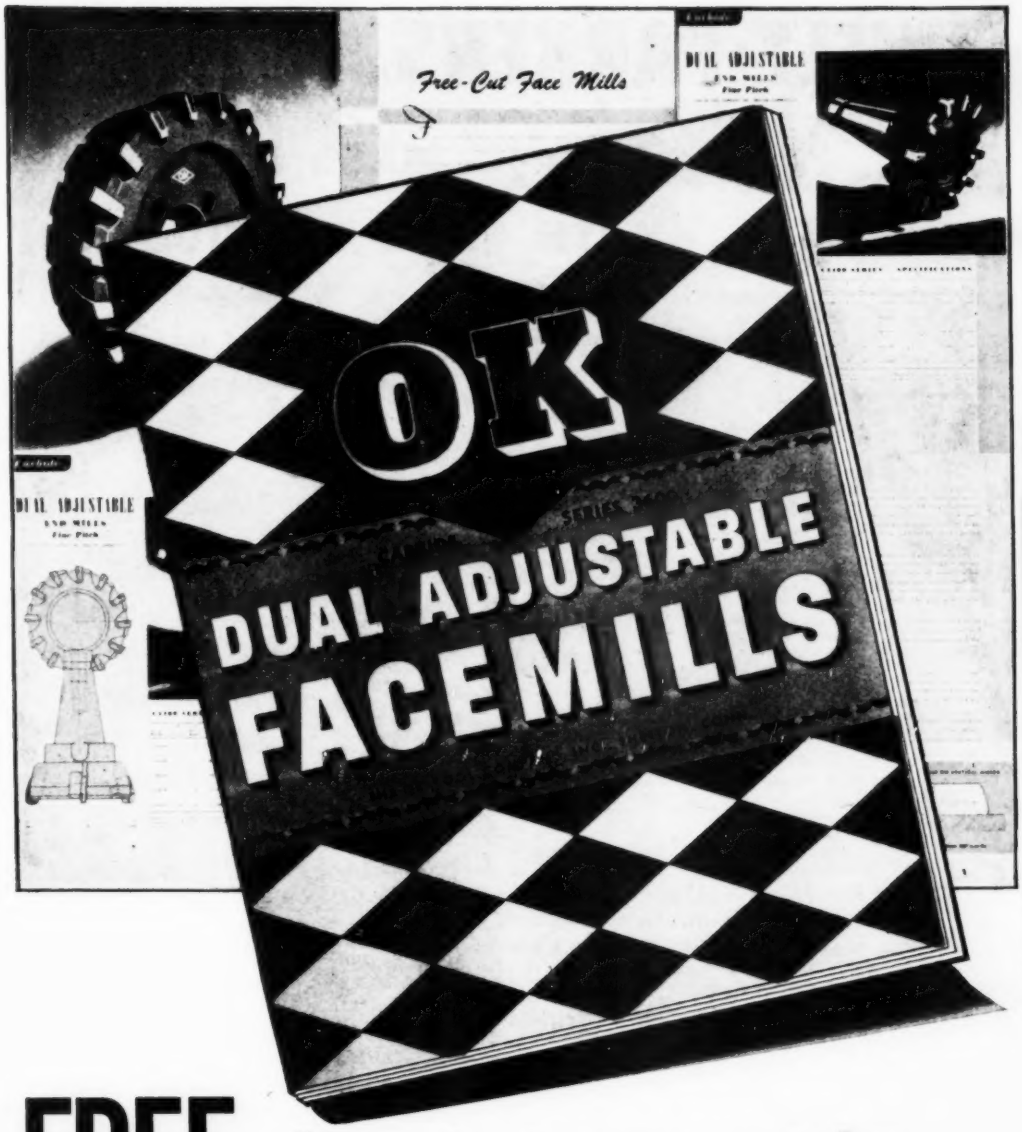
PIERCE
GOVERNORS

your guarantee
of satisfactory
engine performance
and protection

Pierce is one of the world's largest governor manufacturers—offering more than 3,000 different assemblies of Pierce Precision Governors, Pierce Servo Governors and Pierce Road-Speed Governors for gas, gasoline and diesel engines.

WHEREVER GOVERNING IS REQUIRED **PIERCE** GIVES GUARANTEED PERFORMANCE

THE PIERCE GOVERNOR CO., INC. · 1615 Ohio Ave. · ANDERSON, IND.



FREE—important new catalog

OK TOOL 3600 CARBIDE DUAL ADJUSTABLE FACE MILLS, END MILLS, SHELL END MILLS

First Showing of the new FREE CUT FACE MILLS

These new cutters incorporate a combination of angles to obtain desired chamfer or lead angles for new high speeds and feeds. Fill out and mail coupon without obligation. THE O. K. TOOL CO., INC., Shelton, Conn.

THE O. K. TOOL COMPANY, INC.
SHELTON, CONN.

Please send OK Face Mills Catalog 36.

NAME .....

FIRM .....

TITLE .....

STREET .....

CITY ..... STATE .....

ELWELL-PARKERS *Synchronize* MASS HANDLING WITH MASS PRODUCTION

In hundreds of steel skid boxes, E-P trucks move materials and parts throughout this automotive plant. (See Booklet)

E-P Truck speedily places or removes dies from press, greatly reducing press's idle time.

WITH Elwell-Parker Electric Power Trucks, the flow of materials to and from presses can be precisely controlled. This is of vital importance because *no machine is better than its system of supply.* Also, Elwell-Parkers permit flexibility of operations—they move at speeds to match varying departmental needs. They also "pinch hit" for fixed equipment.

A Handling System designed by an experienced man insures (1) Savings in manpower (2) Highest possible output from inter-related machinery (3) Use of valuable "Air Rights" by high tiering loads in plant and warehouse. The Elwell-Parker Electric Co., 4533 St. Clair Avenue, Cleveland 3, Ohio.

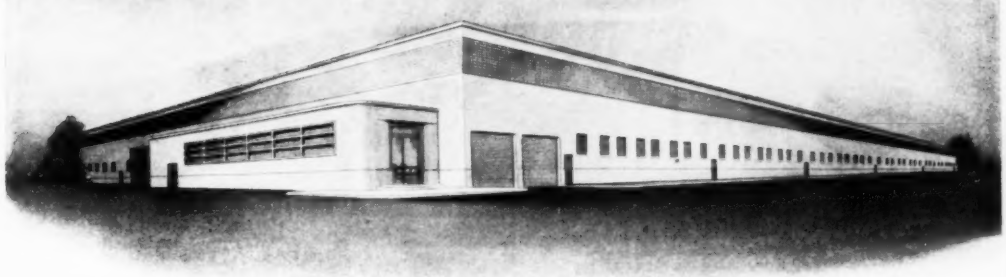
Temporary storage service by high tiering of hot or cold parts.

FREE BOOKLET tells how to synchronize supply with production. Ask for E-P Reporter No. 3.

ELWELL-PARKER
POWER INDUSTRIAL TRUCKS
Established 1893

International's New Building

WILL WAREHOUSE YOUR STEEL



This is an artist's sketch of the new building—now nearing completion—which places over 200,000 square feet of additional area under roof. More space thus becomes available for warehousing steel for International's customers.

Steel Purchases Can Be Financed

International is prepared to assist in financing steel purchases. Details of financial arrangements are worked out to meet the needs of each individual customer. We will welcome your inquiry and an opportunity to place our facilities at your service.

STEEL SERVICE

International

ROLLING MILL PRODUCTS CORPORATION

5033 S. KEDZIE AVE., CHICAGO 32, ILL. *Phone HE 4-5200*

SPINNING POWER

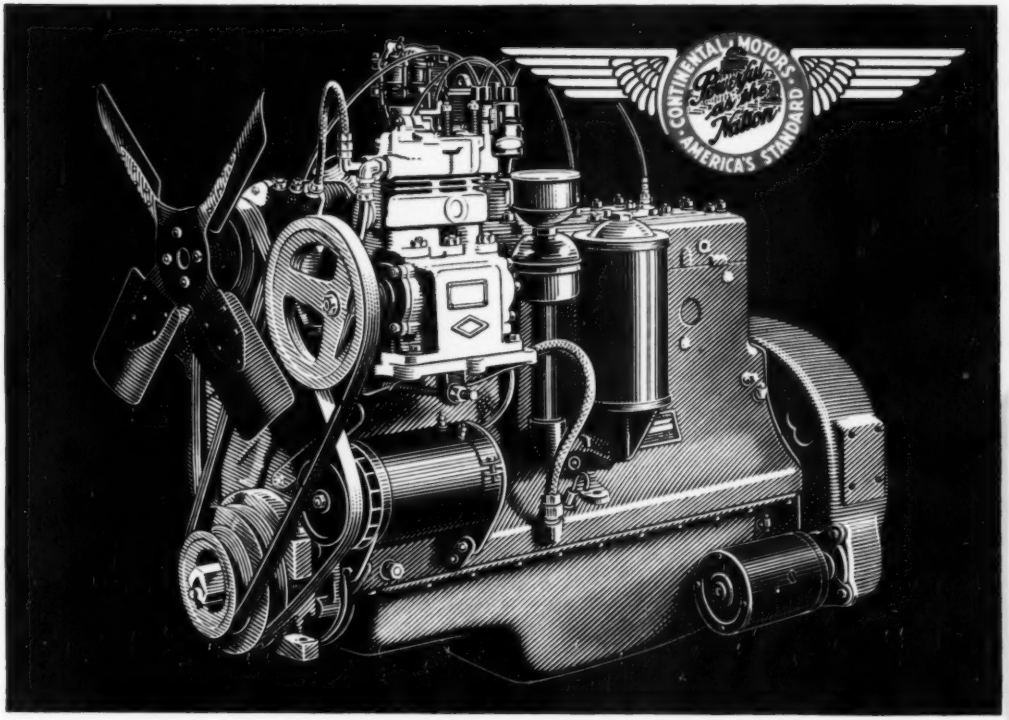
GLOBE-UNION

Starts the World's Motors

Selected by Commander Attilio Gatti, world famous explorer, for his 1948 Gatti-Hallicrafters Expedition to the Mountains of the Moon.

GLOBE-UNION INC., Milwaukee 1, Wisconsin

RED SEAL ENGINES



FOR FASTER SCHEDULES
LESS TIME OUT
LOWEST OVERALL COST

The B-6427 is a 6-cylinder L-head model, delivering 125 horsepower at 2600 r.p.m., and having a generous power reserve above that engine speed. Heat-treated, pressure tested blocks and heads. Statically and dynamically balanced crankshaft. Individual porting for uniform fuel distribution to all cylinders. Sodium-cooled valves and stellite exhaust valve inserts. Full-length water jackets, directed coolant flow, and leakproof water pump.

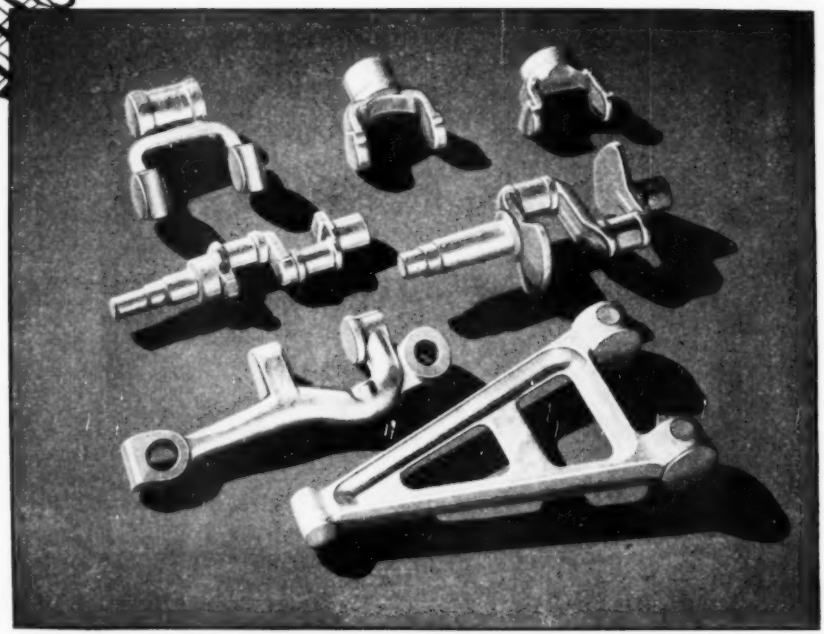
Here's an engine that's making a great name — for itself and for the vehicles it powers. It's the Red Seal B-6427, which is finding ever-wider application in buses, highway tractors and trucks.

The B-6427 packs the reserve power that means faster pickup, and fewer shifts on the grades. It gets there and back at lowest ton-mile or passenger-mile cost. And it does this with minimum servicing—minimum expensive "time out"—because it's engineered and built for these extra-demanding jobs.

BUILT FOR THE JOB!

Continental Motors Corporation
MUSKEGON, MICHIGAN

Reduce machining and finishing operations to a *minimum!*



HERBRAND *Precision* FORGINGS

meet exacting specifications

Strict adherence to specifications and contour effects a real economy in Herbrand Forgings by reducing machining and finishing operations to an absolute minimum. Exact inspection by skilled craftsmen assures forgings free from defects.

Forgings bearing the Herbrand "Diamond H" trademark will fulfill every requirement of your products. If you need quality drop forgings, in quantities of thousands or millions. . . Herbrand is an excellent source of supply. Your inquiries are solicited.

SINCE 1881
Herbrand
SUPER-QUALITY DROP FORGINGS
..the finest money can buy!

HERBRAND DIVISION
THE BINGHAM-HERBRAND CORPORATION
FREMONT, OHIO

Design for
PERMANENCE!

...Are you battling a shortage of materials? Stainless steel may be able to win new competitive advantages for you—perhaps at little or no added cost—and you can get Allegheny Metal *now!*

CALL FOR AN ALLEGHENY LUDLUM ENGINEER

Allegheny Metal is the only stainless steel that is produced in *every* form or shape in which steel can be used.

That's advantageous to both the fabricator and user of stainless equipment. It means undivided responsibility, a single source of supply and of technical assistance, and the same dependably uniform quality from one end of the list to the other. Fabricating conditions are known and constant, with the result that cost figures are lower and the performance of finished equipment is better.

Best of all, you can *get* Allegheny Metal and you can get it *now*, in mill or warehouse shipments. Let us work with you—whatever your need or problem.

ALLEGHENY LUDLUM
STEEL CORPORATION
Pittsburgh, Pa.

Nation's Leading Producer of Stainless Steels in All Forms

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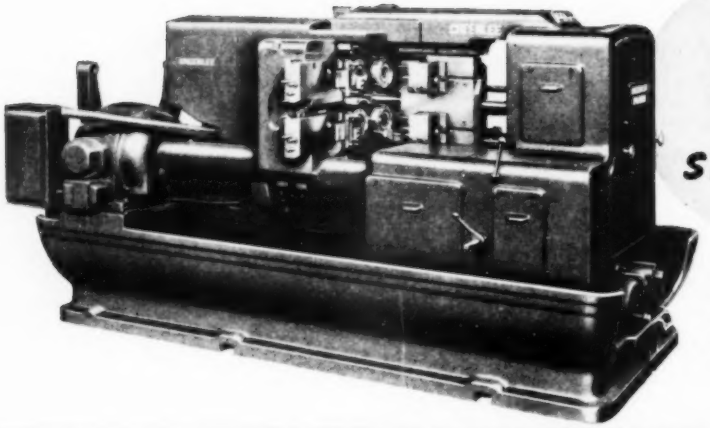
W&D 1554

ALLEGHENY METAL is stocked by all Joseph T. Ryerson & Son, Inc. warehouses



4 SPINDLE

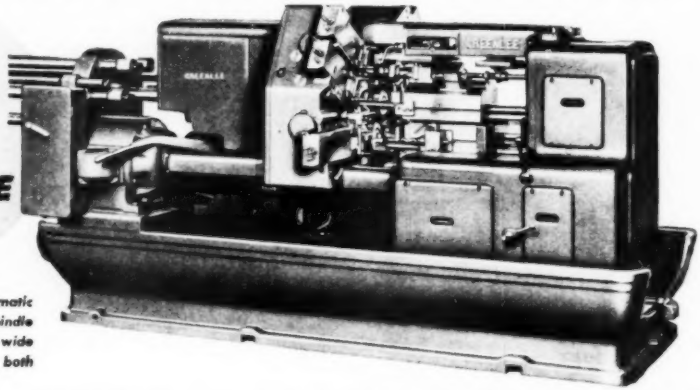
THE GREENLEE "FOUR"

A heavy-duty automatic made in 1¾" and 2⅝" spindle capacities. The "Four" incorporates all the cost-cutting features of the well-known "Six" (see below).

GREENLEE

AUTOMATIC SCREW MACHINES

6 SPINDLE



THE GREENLEE "SIX"

A ruggedly-built, high-speed automatic . . . available in 1", 1⅝", and 2" spindle capacities . . . capable of handling a wide range of work . . . widely used on both short and long-run jobs.

OUTSTANDING FEATURES OF ALL GREENLEE AUTOMATICS

Write for literature describing in detail all the features of Greenlee Automatics.

PRODUCTION MACHINERY

GREENLEE

UNIVERSAL TOOLING — Tool holders fit any cross-slide cavity . . . are easily and quickly changed . . . reduce equipment costs.

INTERCHANGEABLE CAMS — Can be changed at will without re-adjustment of tools and holders. Cam storage is held to a minimum . . . cam costs greatly reduced.

BUILT-IN THREADING DRIVE AND FEED — Not an extra attachment, but standard equipment on Greenlee Automatics.

BUILT-IN COOLANT SYSTEM — Eliminates cumbersome piping in tooling area . . . gets coolant right where it does the most good.

LARGE TOOLING AREA — Permits using many timesaving, cost-cutting auxiliaries that often eliminate second operations.

Various special adaptions of standard Greenlee Automatics can be made . . . for handling second-operation work . . . for tooling extra-long work pieces . . . for multiple feed-out arrangements, etc.

Send us details of your work. Let our engineers show you how profitably Greenlee Automatics can be applied to your production.

GREENLEE BROS. & CO., 1753 Mason Ave., Rockford, Ill.

MULTIPLE-SPINDLE DRILLING, BORING, TAPPING MACHINES • AUTOMATIC SCREW MACHINES • AUTOMATIC TRANSFER PROCESSING MACHINES

NEW

LOW VOLTAGE D. C. POWER

FOR HEATERS, DEFROSTERS, WINDSHIELD WIPERS, TOP LIFTS, ANTENNA LIFTS, WINDOW OPERATORS

Redmond
TYPE "J"
MICROMOTOR
1/10th Horsepower
6 to 24 Volts D. C.
Series or
Shunt Wound

Here's good news for low voltage D.C. power users! It's the new Redmond Type "J" Micromotor . . . rated up to 1/10th horsepower, designed for operation on 6 to 24 volts D.C., series or shunt wound . . . right in every respect for heavy duty automotive applications.

Look at it! It's easy on the eyes . . . sturdily built, finely finished to Redmond's traditionally high standard of excellence. Smooth, quiet, dependable in operation, too. Designed to give you maximum service and top performance over its long and useful life. And it's loaded from shell to shaft with "plus-value" features that come only through years of specialization. Your Redmond representative can give you complete information plus experienced application service. Get in touch with him today!

Descriptive literature on the new Type "J" Micromotor is available upon request. Write for it now!

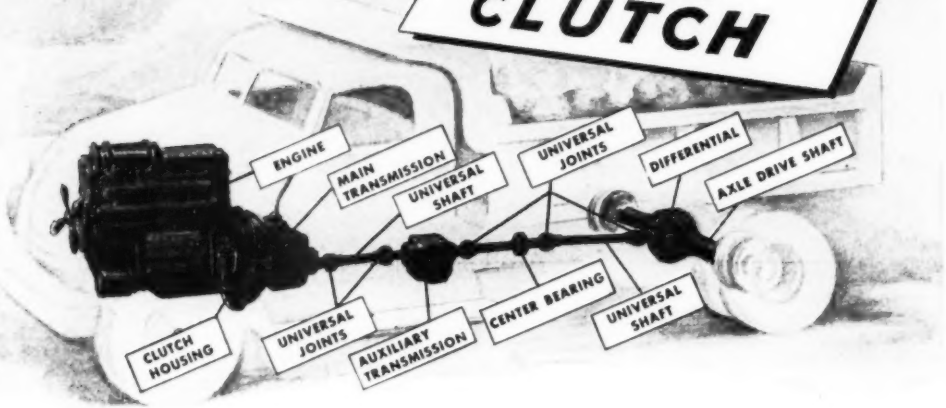
Redmond COMPANY, INC.
OWOSSO, MICHIGAN, U.S.A.

REDMOND ®

EXPANDED FACILITIES • PROMPT DELIVERIES • SERVICE BEFORE AND BEYOND THE SALE

NO GRAB! NO CHATTER! NO BABYING!

LIPE TYPE ML CLUTCH



PREVENTS SHOCK ABUSE OF Gears, Drive Shaft, Universal Joints, Axles and other Vital Points . . . .

No other clutch on the market gives you all the advantages of the Lipe ML Clutch. It drastically reduces maintenance and lay-ups . . . prevents a lot of wear and tear on your vehicle . . . and gives your driver easier control.

HAS ONLY ONE SPRING — It operates twenty levers simultaneously. All of them act on the pressure plate at the same instant.

RESULT—Uniform pressure . . . absolute parallelism . . . smoother engagement.

COOLER OPERATION — Throughout the clutch assembly, the 20 louvred levers act like a high-speed fan. They circulate cooling air while the clutch is in operation.

RESULT—Less heat . . . less pressure plate warpage . . .

EASIER ADJUSTMENT — When friction material wears down, you can easily compensate for it on the Lipe ML Clutch by removing shims from the cover plate. This adjustment does not affect the dynamic balance of the clutch.

RESULT—Restores torque capacity of clutch throughout the life of the friction material.

EASIER MAINTENANCE — You can disassemble and reassemble the Lipe ML Clutch with ordinary tools.

RESULT—You save considerable mechanics' time . . . put your vehicles back on the road more quickly.

- **FOR NON-SHOCK LOADING . . .**
- **LESS MAINTENANCE**
- **MORE HOURS ON THE ROAD . . .**

Always Use LIPE ML Non-Shock CLUTCH!

LIPE ROLLWAY

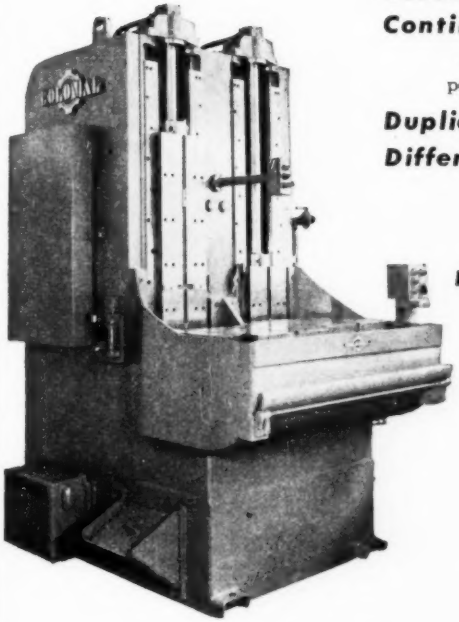
Lipe-ROLLWAY CORPORATION SYRACUSE 1, N. Y.

Cable Address: LIPEGEAR

Get those Machining costs down-

WITH MACHINES LIKE THESE

New COLONIAL DUAL-RAM Surface Broaching Machines



Continuous loading
Continuous cutting
with the rams
performing either
Duplicate operations, or
Different operations, on
the same or
different parts

Now further improved with

All electric controls
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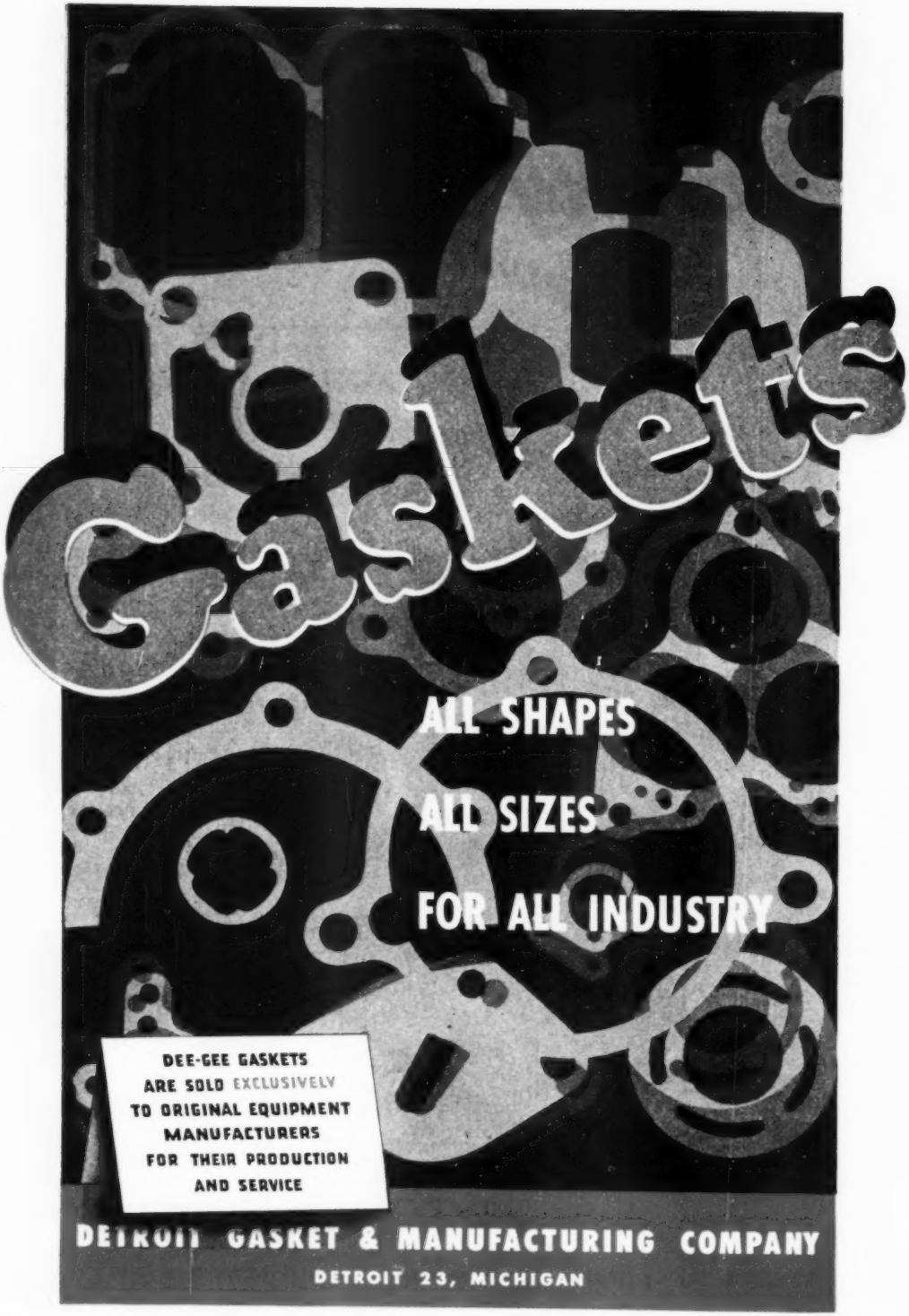
Preselective continuous or single cycling
•
Faster set-up
•
Minimum down-time for maintenance
•
Higher capacity
•
and a host of other operating and structural features.

Ask for Bulletin #RT-48

PIONEERS OF H.S.S. BROACHING

COLONIAL

BROACH CO. DETROIT 13


Gaskets
ALL SHAPES
ALL SIZES
FOR ALL INDUSTRY
DEE-GEE GASKETS
ARE SOLD EXCLUSIVELY
TO ORIGINAL EQUIPMENT
MANUFACTURERS
FOR THEIR PRODUCTION
AND SERVICE
DETROIT GASKET & MANUFACTURING COMPANY
DETROIT 23, MICHIGAN

"Standard" Tubing Techniques

Fabrication by "Standard" Makes Tubular Parts Like These Possible

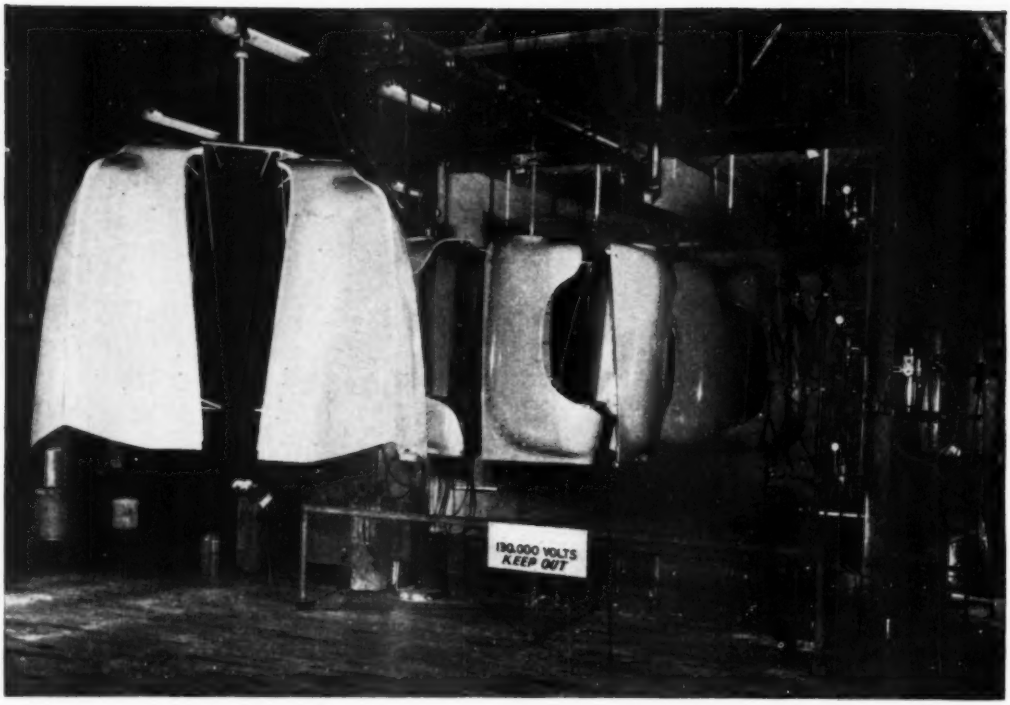
OUR experience and facilities for upsetting, flanging, swaging, spinning, flaring, precision straightening and other difficult fabricating operations, make "Standard" electric weld tubing adaptable to any tubular assembly or part.

Specify "STANDARD"—it pays!

Sizes ½" O.D. to 5½" O.D., 22 B.W.G. to 3 B.W.G.

THE STANDARD TUBE CO.
Detroit 28, Michigan
Welded Tubing — Fabricated Parts

Address Inquiries to the Standard Tube Company, 24500 Plymouth Road, Detroit 28, Michigan



Another STEP *forward...*

With no batching of parts, no elaborate mechanisms, this Ransburg electrostatic spray unit *automatically* paints three *differently* shaped parts, taking them as they come down the production line.

Hoods and fenders join the list of many other automotive components and parts now finished automatically by Electro-Spray methods.

This list includes large parts and small, irregular and symmetrical, sharp-edged stampings and rounded mouldings. Among them are instrument panels, garnish mouldings, heaters, horns, carburetors, air filters, mufflers, shock absorbers—many of them parts which never before could be painted with automatic methods.

Savings **5** *ways* . . . Paint: 40-60% Labor: To 90% Maintenance: To 95% Rejects Floor Space—Overhead

Ransburg
Electro-Coating Corp.
Indianapolis 7, Indiana

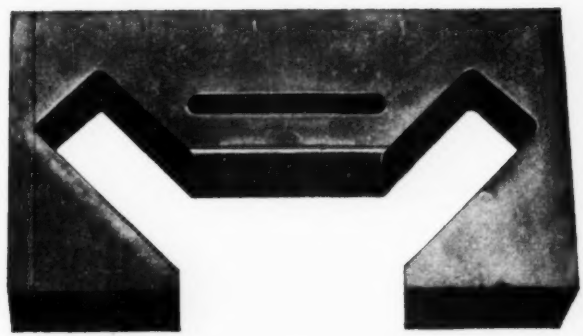
RANSBURG

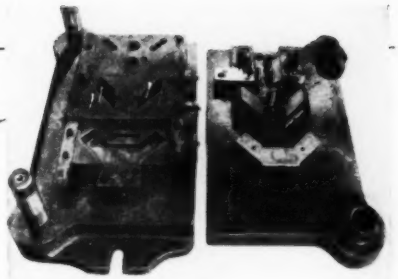
Men who have access to cost figures in these industries tell us that *definite* savings no longer can be questioned with Electro-Spray, that it now remains only to work out the installation that meets particular production requirements.

☆

Chances are that a product like yours is now being finished with the Ransburg process. If not, we shall be glad to demonstrate how YOU CAN BE THE FIRST *to gain a finishing-cost edge of 40 per cent or more for your particular product or products. Please give us complete information in your letter of inquiry.*

How Disston CROLOY was used to solve a die problem





ANALYSIS:

CARBON	1.50%
CHROMIUM	12.00%
VANADIUM	1.00%
MOLYBDENUM	.80%

DISSTON METALLURGISTS AND ENGINEERS will be glad to help you with your tool steel problems . . . and without charge or obligation.

STEEL: Everybody who wants to obtain steel can help himself to get it by immediately starting scrap into the channels that serve steel mills.

WHEN YOU BUY A DISSTON PRODUCT YOU BUY DISSTON STEEL SKILL and SERVICE

THE PROBLEM . . .

A manufacturer had been experimenting with various alloys to find the one best suited for making the wing die shown above. Specifications called for a finished die of Rockwell C 59/61, without scale and with minimum distortion . . . dimensions had to be held within .002-inch, for no tolerance was allowed for finish grinding.

THE SOLUTION . . .

DISSTON CROLOY AIR HARDENING STEEL

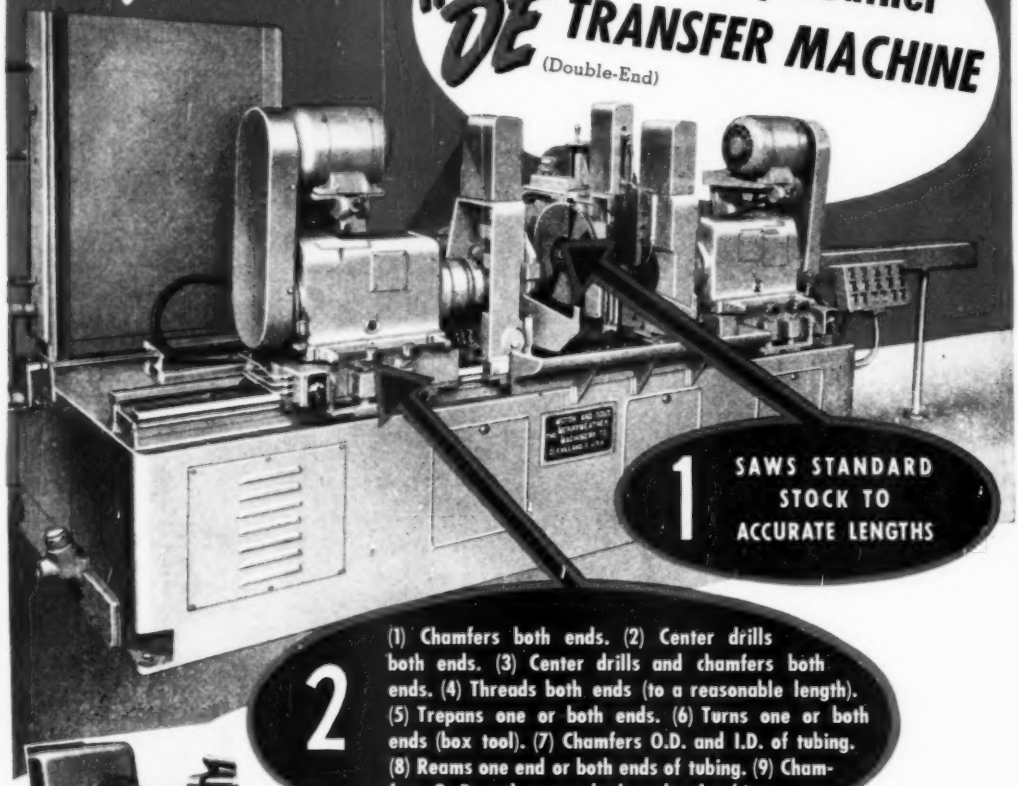
This high quality, many purpose tool steel was designed to give high resistance to sliding and impinging wear, and at the same time combine air hardening properties with reasonable machinability. It has proved to be exceptionally serviceable for tools such as punches, dies, slitting cutters, gauges, brick liner plates, wearing parts and other applications.

HENRY DISSTON & SONS, INC., 331 Tacony, Philadelphia 35, Pa., U.S.A.

Substitute 1 Machine for 3 or 4!

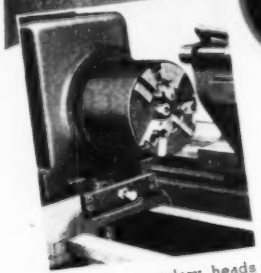
The Motch & Merryweather "DE" TRANSFER MACHINE

(Double-End)



1 SAWS STANDARD STOCK TO ACCURATE LENGTHS

2 (1) Chamfers both ends. (2) Center drills both ends. (3) Center drills and chamfers both ends. (4) Threads both ends (to a reasonable length). (5) Trepans one or both ends. (6) Turns one or both ends (box tool). (7) Chamfers O.D. and I.D. of tubing. (8) Reams one end or both ends of tubing. (9) Chamfers O. D. and reams both ends of tubing.



Rugged secondary heads with simple gear reduction to husky spindle. Positioning slide adjusted quickly by rack and pinion. Hydraulic feeds and variable speeds.

MORE THAN A NEW MACHINE — ACTUALLY A NEW METHOD

The Motch and Merryweather "DE" (double end) Transfer Machine has no equivalent. Standard bar stock is automatically fed, cut off with a square *milled finish*, to accurate lengths of ± .004"; then automatically transferred to equalizing, self-centering jaws for accurate double-end machining. You save at least one operator; save several handlings; save overhead and floor space; save tooling. Husky construction makes for trouble-free service and long, profitable life.

Get the facts about this remarkable new but thoroughly proven machine.

Only M & M builds ALL 3: CIRCULAR SAW · SAW BLADE · BLADE GRINDER

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PRODUCTS: SODIUM COOLED, POPPET, AND FREE VALVES • TAPPETS • HYDRAULIC VALVE LIFTERS • VALVE SEAT INSERTS • ROTOR PUMPS • MOTOR TRUCK AXLES • PERMANENT MOLD GRAY IRON CASTINGS • HEATER-DEFROSTER UNITS • SNAP RINGS • SPRINGTITES SPRING WASHERS • COLD DRAWN STEEL • STAMPINGS • LEAF AND COIL SPRINGS • DYNAMATIC DRIVES, BRAKES, DYNAMOMETERS

Motor-Makers Know that AMERICAN PHILLIPS SCREWS *put up a "Good Show"*

On the Production Floor . . . and Sales Floor, too!

GOOD SHOW IN PRODUCTION: Assembly rolls along smoothly in high gear, with fastenings made by American Phillips Screws that turn up straight and tight *every time* . . . with never a slip or a slash to spoil costly enameled surfaces. Workers do more and better work, far more easily, than they ever did with out-of-date slotted screws. *And time savings run as high as 50%.* That's why so many million American Phillips Screws are used in automotive plants *every month.*

GOOD SHOW IN SALES: The modern mark of American Phillips' cornerless, crossed recess is one of the quality insignia of top cars and trucks . . . a feature looked for and recognized by customers. It means no unsightly burred heads to mar sales appeal or snag clothes and hands. And it means extra vibration-resistance to keep bodies tight and squeak-free. Does *your* product have this double-feature of production-economy and sales promotion? Then write:

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AMERICAN PHILLIPS *Screws*

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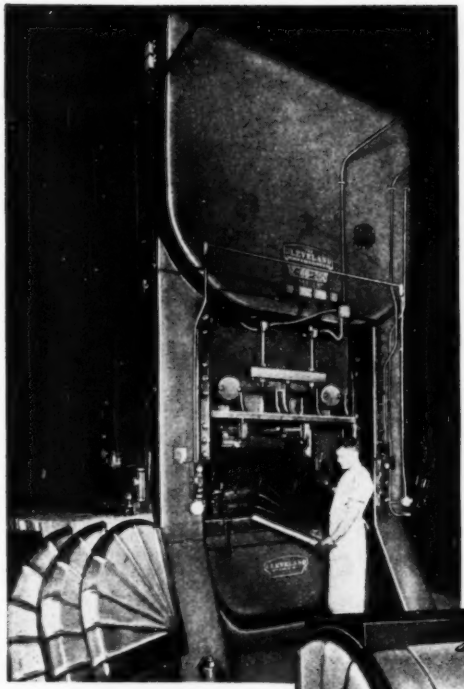
A CLEVELAND STORY

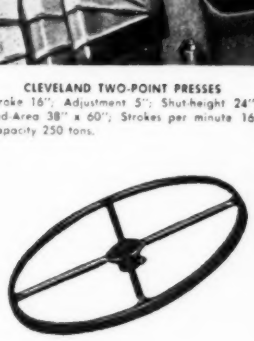


CLEVELAND TWO-POINT PRESSES
Stroke 16"; Adjustment 5"; Shut-height 24"; Bed-Area 38" x 60"; Strokes per minute 16; Capacity 250 tons.

In keeping with their "policy of progress" The Viking Air Conditioning Corporation has developed the modern streamlined Viking-Blower-Package shown below. This Blower has already found wide acceptance. Efficiency, serviceability and smart appearance were soon recognized. Like so many other nationally known manufacturers, Viking has, after careful investigation, installed a number of MODERN CLEVELAND PRESSES. The adaptability of these Presses, to various types and sizes of dies, has enabled Viking to produce a wide variety of stampings at the lowest possible cost.

We are proud that CLEVELAND PRESSES have helped The Viking Corporation to achieve these worthwhile results. When you expand or replace your present Power Presses we believe that you, too, will find it advantageous to install MODERN CLEVELAND PRESSES, designed to assure long life, dependability, accuracy and profitable production.

For complete information on the new CLEVELAND DRUM TYPE FRICTION CLUTCH and BRAKE, which offers greater economy and efficiency for all presses, write for Bulletin 35.



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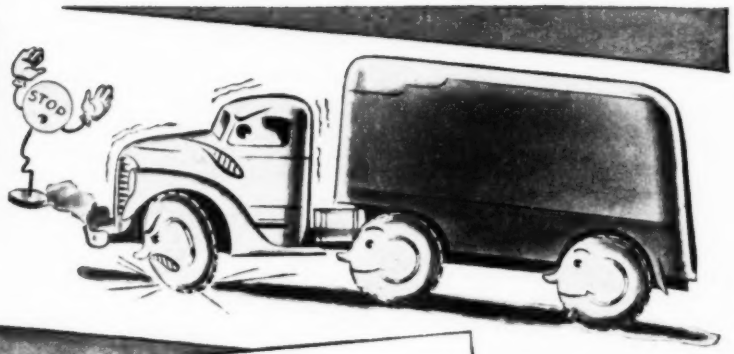
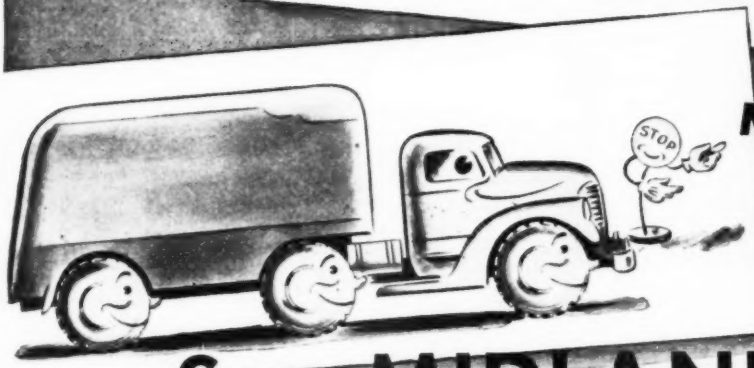
FABRICATING TOOLS

CLEVELAND 14, OHIO

it should'nt happen to a tractor!





MIDLAND shows how to keep 'em all happy!

...See MIDLAND for

SYNCHRON-AIR BRAKE SYSTEM

PROVIDES: Synchronized air brake application and release on all axles • Selective front axle brake control automatically and proportionately graduated between stations • Option to apply and release a predetermined proportion of tractor rear axle brakes simultaneously with trailer brakes through hand brake valve • High capacity trailer emergency relay valve • Single unit tank and emergency relay valve.

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PROVIDES: Synchronized tractor vacuum hydraulic and trailer vacuum brake application and release • Uniform control under all weather conditions • Single unit trailer tank and relay valve • Easily installed • Improved brake lining life.

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AUTOMOBILE AND TRUCK FRAMES

BUS DOOR CONTROLS

A greatly improved speedometer by KING-SEELEY

OLD TYPE MAGNET

NEW, CUNIFE MAGNET

The performance, dependability and service life of an automotive speedometer depends primarily on its permanent magnet and the ability of that magnet to retain its initial strength under all operating conditions.

A new and much superior magnet is now being used exclusively in King-Seeley speedometers. It is made of Cunife, a very powerful magnetic material having unusual physical properties which has made possible an instrument of greater accuracy, dependability and longer life.

Specifically, this new Cunife magnet provides 30% more force with only two-thirds of the weight of the previous magnet. The new material has reduced bearing load 50% and is 750% more stable. It is far more resistant to temperature variations, vibration, shock and the effects of stray magnetic fields.

This is another result of King-Seeley's continuing research program which has for many years led the march of progress in the field of automotive instruments.

5038

KING-SEELEY *Corporation*

PLANTS IN • ANN ARBOR GRAND RAPIDS • YPSILANTI

The CRANKSHAFT is probably the most important single part in the modern high-speed, high-compression, internal-combustion engine.

Wyman-Gordon—specialists in the design and forging of crankshafts since the start of the automotive industry—furnished the first heat-treated crankshaft, forged the first six-throw crankshaft, forged the first eight-throw crankshaft, forged the first crankshaft with integral counterweights. In automotive crankshafts and in all types of aircraft forgings, steel and light alloy, there is no substitute for Wyman-Gordon experience.

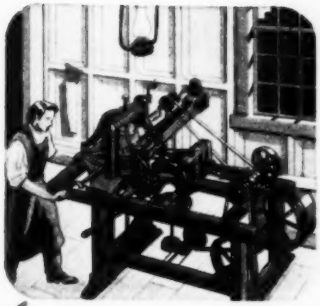
Standard of the Industry for More Than Sixty Years

WYMAN-GORDON

Forgings of Aluminum, Magnesium, Steel

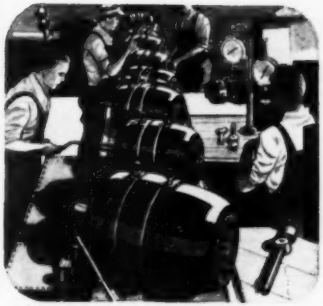
WORCESTER, MASSACHUSETTS, U. S. A.

HARVEY, ILLINOIS - - - DETROIT, MICHIGAN



1 1865—Here's how machines looked before man applied electricity for industrial usage. Gear setups were crude. Making parts fit was a matter of luck and plenty of tinkering by operators.

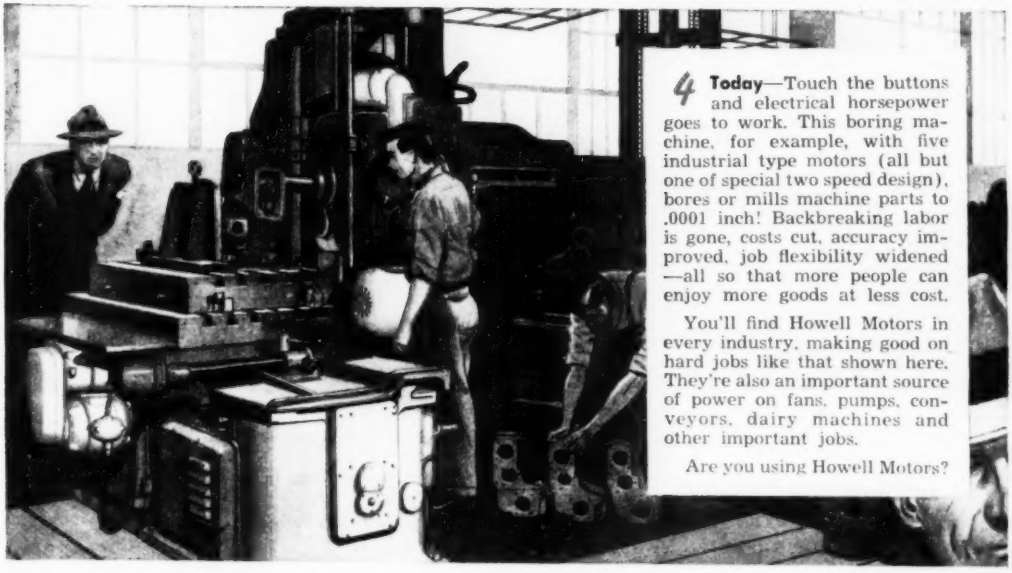
2 1907—Electrical horsepower gave production a big boost. But gear mechanisms were far too cumbersome. Repairs were frequent. Men were still struggling to make one motor do the work of many . . .



3 1915—Howell "Red Band" Electric Motors arrived. These rugged, industrial type motors were specially designed to withstand hard usage. Soon, Howell Motors appeared in this and other industries.

NOW, IT'S TOUCH AND GO!

(and parts are machined quicker and to closer tolerances)



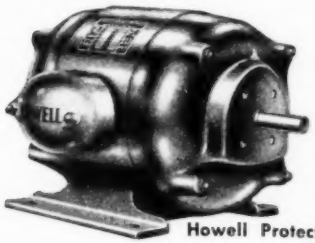
4 Today—Touch the buttons and electrical horsepower goes to work. This boring machine, for example, with five industrial type motors (all but one of special two speed design), bores or mills machine parts to .0001 inch! Backbreaking labor is gone, costs cut, accuracy improved, job flexibility widened—all so that more people can enjoy more goods at less cost.

You'll find Howell Motors in every industry, making good on hard jobs like that shown here. They're also an important source of power on fans, pumps, conveyors, dairy machines and other important jobs.

Are you using Howell Motors?

Free enterprise encourages mass production, supplies more jobs—provides more goods for more people at less cost.

Here's another precision-built Howell Motor . . . industrial type with copper or bronze bar rotors . . . specially insulated . . . statically and dynamically balanced.



Howell Protected Type Motor

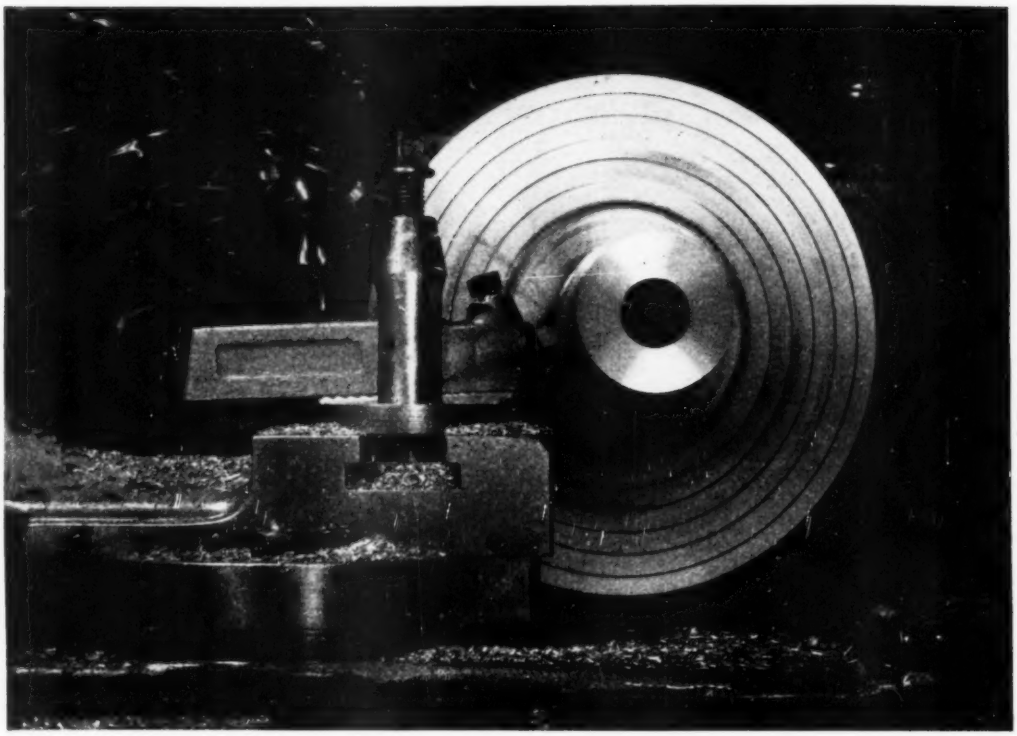
HOWELL MOTORS

HOWELL ELECTRIC MOTORS CO., HOWELL, MICH.

Manufacturers of Quality Industrial Type Motors Since 1915

Resulphurized Alloy Steels

for faster machining...for longer tool life



The use of certain grades of resulphurized steels can have a considerable effect on production costs. Time required for machining is usually reduced, and the number of pieces produced per tool is often increased to a substantial degree. These advantages, of course, vary with the grade and sulphur content of the steel used, the structure, the type of machining operation, and the specifications of the finished part.

Bethlehem manufactures free-machining resulphurized steels in a variety of grades. Our metallurgists will gladly furnish detailed information and explain how these steels can be used to advantage in your work. Write or phone.

BETHLEHEM STEEL COMPANY, BETHLEHEM, PA.

On the Pacific Coast Bethlehem products are sold by Bethlehem Pacific Coast Steel Corporation
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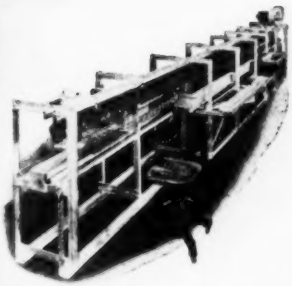
★ **BETHLEHEM ALLOY STEELS** ★

BETHLEHEM STEEL ★

MEAKER Electroplating Machines

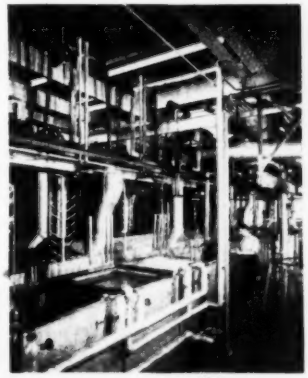
Tailored to Fit

Typical Meaker Straight-A-Way Automatic Machine. This machine was built for copperplating three rows of work simultaneously. It handles 125 racks per hour that are 16 inches wide, 14 inches thick, and 70 inches long.

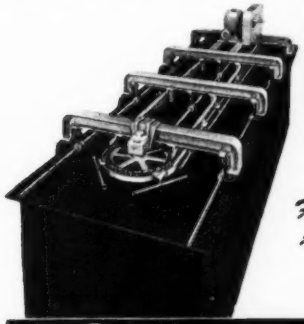


Meaker Special Machine designed for cleaning and silver plating small, brass contact clips. The unit is loaded at one point and the parts are carried through the operating sequence and automatically discharged into a container when completed.

Meaker Return-Type Automatic Machine for chromium plating the large variety of parts in a high-quality line of plumbing hardware.



A Meaker Semi-Automatic Machine for use in medium-output plating departments. This type equipment is used in large, job plating plants to supplement the capacity of automatic machines.



Equipment tailored to fit your requirements, making every operation in the plating sequence automatic, or as mechanized as possible, is the profitable way to handle electroplating on a production basis. This Meaker method applies equally well to departments with only moderate daily output and to the largest and heaviest automatic plating needs of the mass production plants. It offers not only a lower unit cost, but the production is increased, and a better and more uniform quality of product is assured.

Write for the Full Information. Ask for Booklet No. 148 →

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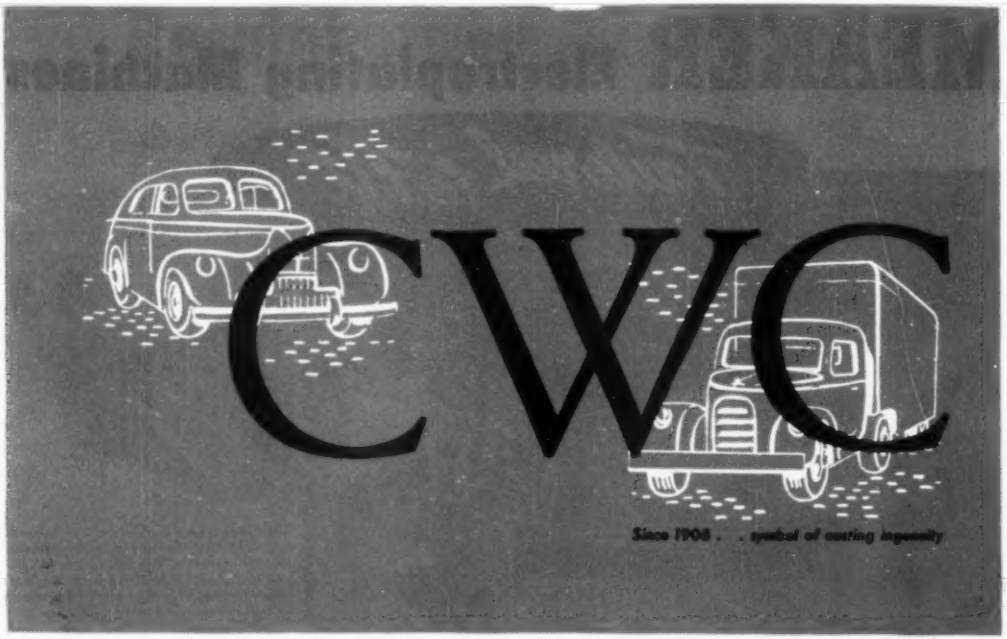

source of most that is new

Men in the automotive industry have long recognized CWC as the source of most that is new in casting iron and steel. Because of CWC advanced metallurgical engineering, precise control of the metal before it is poured, and mechanized facilities for volume production, great developments in castings have been made possible. From the five Campbell, Wyant and Cannon foundries come many thousands of *cast* cylinder blocks and heads, *cast* pistons, *cast* gears, *centrifugally cast* cylinder liners and revolutionary *cast* camshafts. These, and scores of other CWC castings are incorporated in leading automobiles, contributing to better design and operation, and to greater economy.

CWC

Campbell, Wyant and Cannon Foundries—*Muskegon, Michigan,* HENRY STREET PLANT • SANFORD STREET PLANT BROADWAY PLANT. *South Haven, Michigan,* NATIONAL MOTOR CASTINGS DIV • *Lansing, Michigan,* CENTRIFUGAL FUSING CO.

CAMPBELL, WYANT AND CANNON FOUNDRY COMPANY

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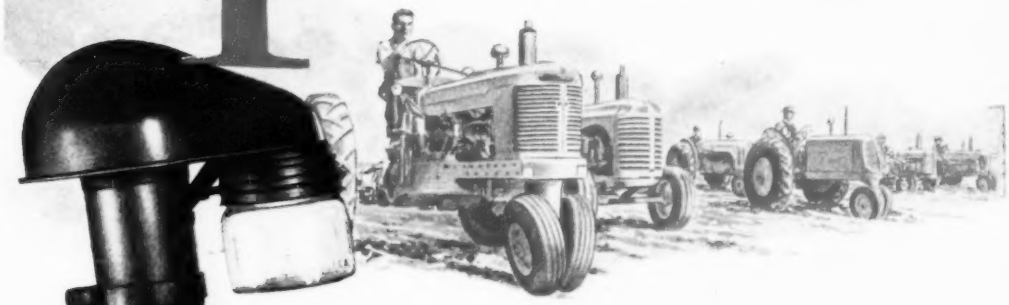
First choice



Since 1916, the great majority of power farm machinery manufacturers have chosen Donaldson Air Cleaners as standard equipment.

This preference *must* be based on performance, which we believe is two-fold. First it is performance from the standpoint of engine protection by Donaldson Air Cleaners in the field. Secondly, it is the service provided by the Donaldson research, engineering and production departments.

This kind of performance has made the Donaldson Company the world's largest manufacturer of heavy-duty air cleaners. The experience and knowledge we have gained in solving dust protection problems for leading manufacturers of heavy-duty equipment will assist you in choosing the right air cleaner for your product. Write our engineering department.

These leading manufacturers use Donaldson Air Cleaners . . .

TRACTORS	TRUCKS
Allis Chalmers	Autocar
Caterpillar	Diamond T
Cockshutt	Euclid
Co-op	Federal
Ferguson	Four Wheel Drive
John Deere	International Harvester
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International Harvester	Oshkosh
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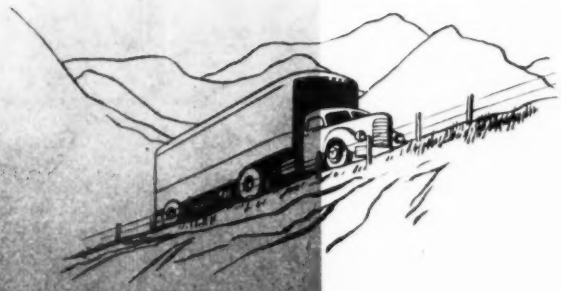
DONALDSON CO. (CANADA) LTD. CHATHAM, ONTARIO

DONALDSON *Oil-Washed* AIR CLEANERS

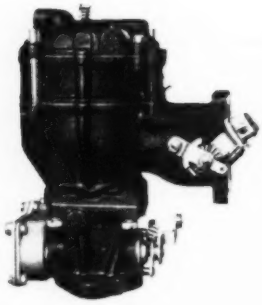
SALES ENGINEERS: CHICAGO • DETROIT • CLEVELAND



Where heavy-duty carburetors
are purchased on PERFORMANCE . . .

Zenith

is the Engineers' Choice!



The prime reason most factory and maintenance engineers prefer Zenith is its smoother, better all-around performance mile after mile. They know these long-range advantages inevitably result in lower operating costs and generally greater economy. The fact that most engineers choose Zenith* to meet every heavy-duty carburetion requirement is powerful testimony that Zenith does the job best.

*REG. U.S. PAT. OFF.

ZENITH CARBURETOR DIVISION OF
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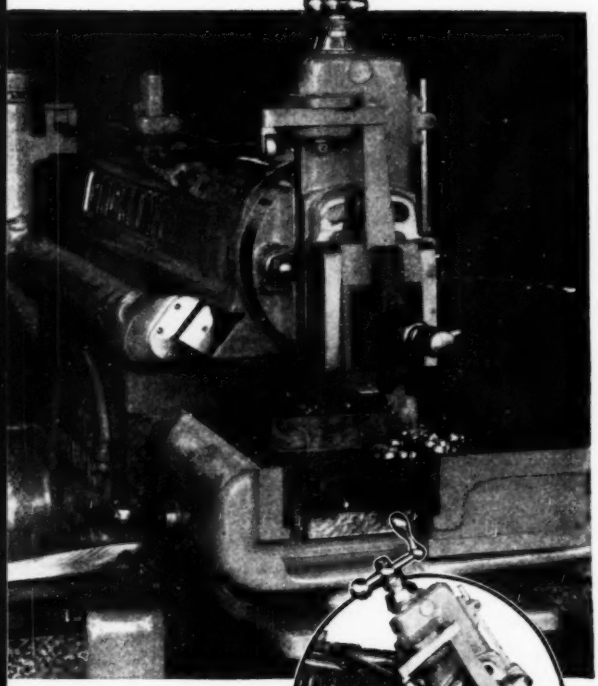
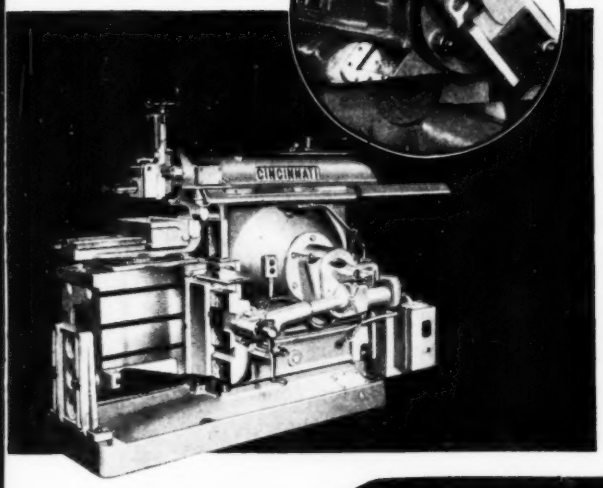
Bendix
AVIATION CORPORATION

Millions of cuts . . .





with the NEW
CINCINNATI TOOL LIFTER

DURABLE

The Cincinnati Tool Lifter, a new development, operates millions of times without a fault. A successful tool lifter must be certain in action on each stroke to prevent tool damage It must *continue* to be certain month after month, year after year, for millions of operations. The Cincinnati Tool Lifter, with positive return as well as positive lift, is outstandingly successful.

VERSATILE

Efficient at high speeds or low, long strokes or short—dependable at different positions or angular settings of tool slide—or clapper box, the Cincinnati Tool Lifter is truly versatile and productive.

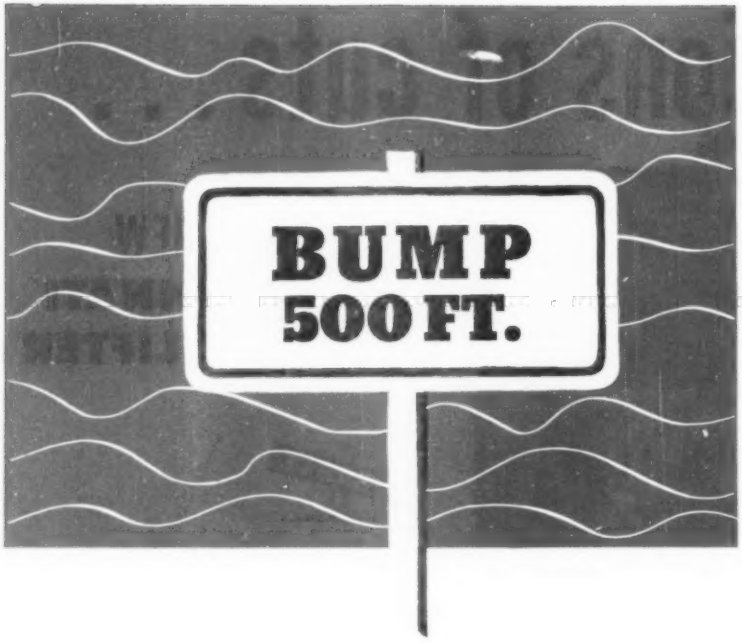
AUTOMATIC

It relieves operators and greatly increases speed of cutting. After simple setting it is automatic.

SPEEDY

Carbide and high-speed cutting tools both operate to greater advantage when protected by a Cincinnati Tool Lifter.
Write for Catalog N-3.

THE CINCINNATI SHAPER CO.
CINCINNATI 25, OHIO U.S.A.
SHAPERS · SHEARS · BRAKES



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you're sitting on springs!

Bad roads are smoother . . . shock is practically eliminated. You're cradled in the soft comfort of cushion spring seats. Very likely they're McInerney cushion spring constructions. For more than a generation, leading automobile manufacturers have specified McInerney. So much skillful engineering and infinite care goes into a modern car, it's only natural to demand the very best in seating. And experience shows — there's nothing like top-quality, long-lasting McInerney cushion spring constructions for mile after mile of easy riding comfort.

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FACTORIES: Grand Rapids, Michigan and Passaic, N. J.
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NATIONAL OIL SEAL LOGBOOK

CHARACTERISTICS AND LIMITATIONS OF SPRING-LOADED LEATHER OIL SEALS

The broad applicability and outstanding performance of the single-member spring-loaded leather oil seal has made this design the most widely used of all oil seals. Together with a similar design in synthetic rubber, these single-wipe seals account for more than 80% of all seals used today.

There are three important reasons why spring-loaded leather seals have proven so successful in a wide variety of applications:

1. They seal effectively on relatively rough shafts.

2. Permit wide tolerance in shaft size.

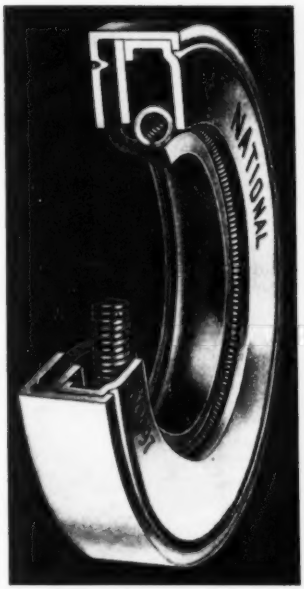
3. Operate well under oil starved conditions for long periods.

The spring-loaded leather seal is limited in operation as to speed (2000 FPM); temperature (200° F.); pressure (20 lbs. psi), and run-out (.010 indicator reading). However, the spring-loaded leather seal is virtually the only design that provides good protection on rough shaft surfaces . . . up to 65 RMS with low leakage. This same inherent characteristic also permits a wide latitude in the machining of shaft diameters—an important advantage in high speed production of equipment.

A distinct advantage of the spring-loaded leather oil seal is its rugged construction. Such seals, particularly the 50,000 series National Oil Seal (illustrated), are built with a heavy cross-section. This allows the seal case to withstand hard knocks during assembly, and provides a margin of safety against inexpert replacement techniques in the field.

And, furthermore, because the leather sealing members are porous enough to retain lubricant within themselves, these seals can operate under dry conditions for some time . . . a safety margin against neglect of lubrication.

Single-wipe spring-loaded leather seals are the most completely tooled of all designs, and production quantities are generally available in almost any standard bore or shaft size. Spring-loaded leather National Oil Seals (National 50,000 series) are available from stock in more than 850 different size combinations. For complete information, write direct to factory or get in touch with the nearest National Oil Seal Engineer. (See list below.)



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OIL AND FLUID SEALS

NATIONAL MOTOR BEARING CO., INC.

General Offices: Redwood City, California
Plants: Redwood City and Los Angeles, California; Van Wert, Ohio

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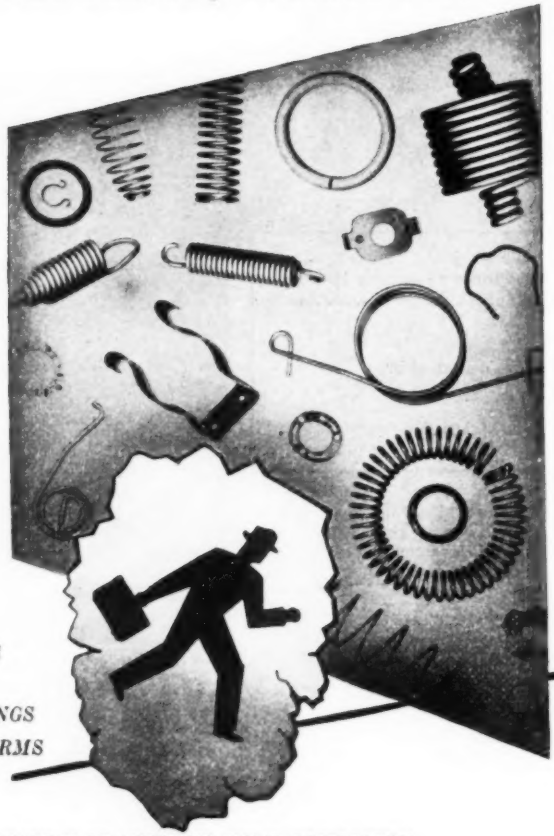
NEW YORK CITY: 122 East 42nd Street, Lexington 2-8260. **PHILADELPHIA:** 401 North Broad Street, Bell-Walnut 2-6997.
REDWOOD CITY, CALIF.: Broadway and National, Emerson 6-3861. **WEST SPRINGFIELD, MASS.:** 1025 Elm Street, Springfield 2-1881.
EAST SYRACUSE, N. Y.: 226 Roby Avenue, East Syracuse 366. **WICHITA:** 340 North St. Francis Street, Wichita 2-6971.

Spring Worries?

Our Factory-Trained Field Men Are Near You . . .



When your spring procurement problems indicate the need of a specialist at your elbow, send out a call for one of our 38 trained men constantly in circulation in the industrial field. With coverage like this, you will get prompt if not immediate action.

This is one of the many good reasons why it pays to do business with this alert group of seven spring plants.

SPRINGS
SMALL
STAMPINGS
WIRE FORMS

THE BEST SEVEN SOURCES FOR MECHANICAL SPRINGS

ORIGINAL DIVISIONS OF ASSOCIATED SPRING CORPORATION

WALLACE BARNES COMPANY
BRISTOL, CONNECTICUT

THE WILLIAM D. GIBSON COMPANY
1800 CLYBOURN AVE. CHICAGO 14,

RAYMOND Manufacturing COMPANY
CORRY, PENNSYLVANIA

BARNES-GIBSON-RAYMOND
6400 MILLER AVE. DETROIT 11, and ANN ARBOR, MICH.

. . . . AND DUNBAR BROTHERS COMPANY DIVISION, BRISTOL, CONN.
OHIO DIVISION, 1712 EAST FIRST STREET, DAYTON, OHIO
IN CANADA, THE WALLACE BARNES CO., LTD., HAMILTON, ONT.

THE MARK OF A *Superior Product*

For many years **PRODUCTS BY STANDARD** have played a dependable and important part in the superb performance of America's finest motor vehicles.

That reputation for excellence applies to every one of STANDARD'S large family of quality products: door locks, checks or remote controls from our Reid Products division . . . **STEECHAN** glass run window channel and contour weatherstripping . . . molded and extruded rubber parts . . . injection molded plastic parts and fittings.

You can be sure of proper engineering and dependable performance in products bearing **THIS MARK** of quality.

The Standard Products Co.

EXECUTIVE OFFICES — 2130 W. 110th ST. CLEVELAND 2, OHIO

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Plants Located in Port Clinton, Ohio • Cleveland, Ohio • St. Clair, Mich. • Gaylord, Mich. • Windsor, Ontario

KELSEY-HAYES

South San Francisco, California Plant

World Famous source of K H Vacuum Power Brake Equipment for Tractor Trailers

One of 8 Great Plants Specializing in Superior Automotive Products

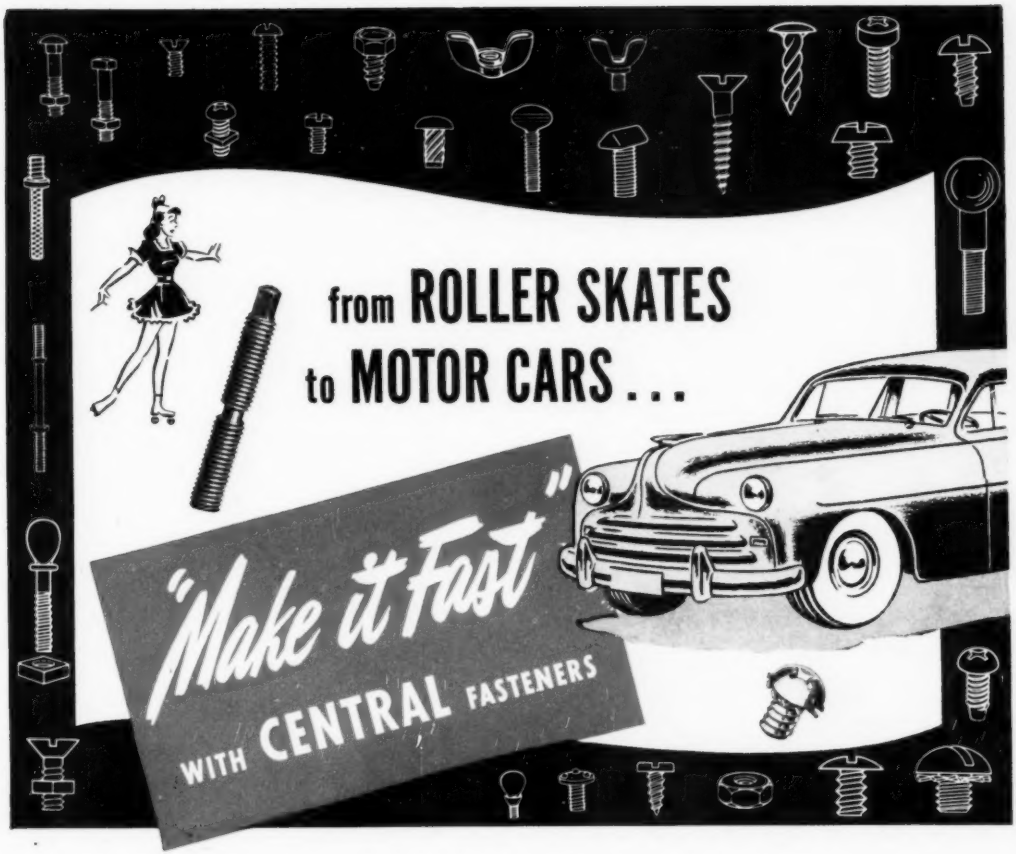
The name *Lathan Division* is most important in the field of brakes and brake power equipment. This exceptionally well equipped, modern plant in South San Francisco is the last word in precision production of *Lathan* brake hand controls, brake power units, power chambers, vacuum reserve tanks, conversion valves, and other superior brake equipment for every commercial vehicle and combination. Just a feather-touch on *Lathan* controls brings the mightiest, multi-ton giant of the road to a fast, silky-smooth, safe stop—perfectly controlled, *Lathan* means perfect braking.

K-H ASSURES PROVEN PRODUCTS AT

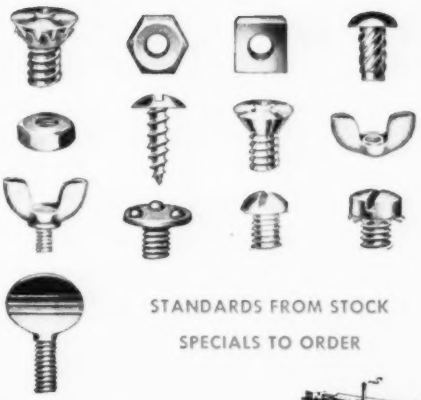
KELSEY-HAYES WHEEL COMPANY

DETROIT 32, MICHIGAN

Wheels—Hub and Drum Assemblies—Brakes—"Vacdraulic" Brake Power Units—for Passenger Cars, Trucks, Buses—made by Kelsey-Hayes' 4 Michigan Plants and Windsor-Canada Plant • "Magdraulic" Electric Brakes • "Lathan" Vacuum Power Brake Equipment for Tractor-Trailers—made by Kelsey-Hayes' South San Francisco-Lathan Plant • Wheels—Hubs—Axles—Parts for Farm Implements—made by Kelsey-Hayes' French & Hecht Plant at Davenport, Iowa.



From the clamp adjusting screw on roller skates, to the adjusting screws on your auto brakes . . . or the many Central Phillips recessed screws that line your interior trim, down to the copper contact bolt that starts your car . . . Central is a leading producer. In fact, Central screws are found on everything that rolls . . . cars, skates, tractors, mowers . . . kiddie carts. TWO HIGH SPEED PLANTS—one East, one West, simplify your purchases and speed your deliveries . . . *fast!*



Fast DELIVERIES . . .
FROM CENTRAL'S **2** BIG PLANTS

STANDARDS FROM STOCK
SPECIALS TO ORDER

A TWO-PLANT ORGANIZATION FOR QUICK NATION-WIDE SERVICE

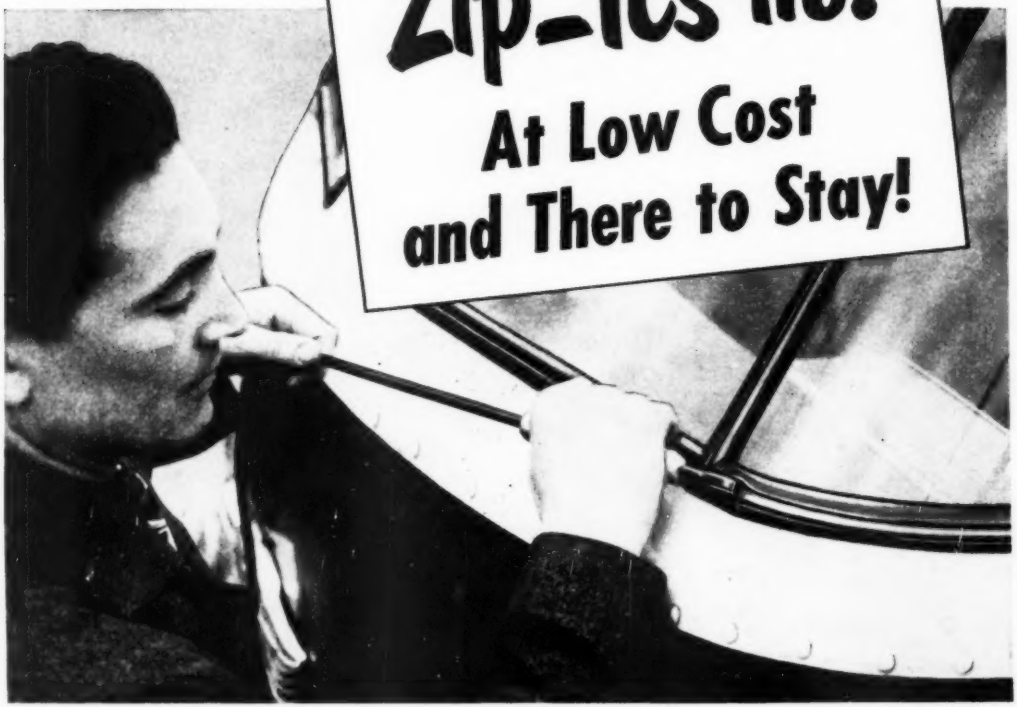
"You Can Depend on Central"

CENTRAL SCREW COMPANY

3501 SHIELDS AVE., CHICAGO 9, ILL. • 149 EMERALD STREET, KEENE, N. H.

Zip—It's in!

At Low Cost and There to Stay!

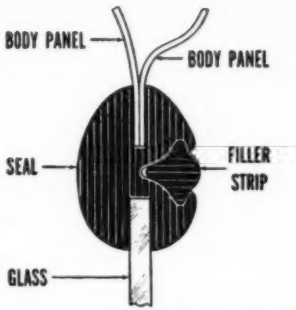


INLAND SELF-SEALING WEATHER STRIP cuts production costs, gives permanent protection

Trucks, cabs, buses or any commercial vehicles cost less to build when Inland Self-Sealing Weather Strip is used. And it gives operators permanent weatherproofing.

Compare the methods. Ordinary sealing usually means two men, preparation, sub-assembly, slow installation, reworking and cleanup. But one man does it all . . . the Inland way. Using no cement, he slides the Inland seal into the body panel opening, eases the glass into the seal, and zips the filler strip into the locking channel. That's all he has to do. He's through.

It costs less . . . and it pays more, in sales and user satisfaction . . . to build trucks or any vehicles with Inland Self-Sealing Weather Strip as original equipment. Write today for complete details.



See how easy it is? The seal goes readily onto the body panel. Then the glass fits into the seal. Then the filler strip is zipped into the locking channel. That window or windshield, and all the rest of them, are weatherproofed for keeps. Simple, easy, fast, economical.

INLAND MANUFACTURING DIVISION
GENERAL MOTORS CORPORATION DAYTON, OHIO

INLAND MANUFACTURING

Self-Sealing Weather Strip
(PATENTED)

DOES THIS NEW GRINDING & POLISHING UNIT GIVE YOU AN IDEA?

"Hill" 2-Roll Vertical Abrasive Belt Polishing Machine with cover removed.

HILL ACME TOOLS FOR INDUSTRY

Here is a totally new design in bar (or plate) grinding and polishing machines that may be used for an individual operation or assembled in multi-stage units for continuous finishing. "Hill" 2-Roll Vertical Abrasive Belt power driven feed or pinch roll type machines are now being used very successfully for line polishing of sheets, plates or blanked shapes in the flat before forming. Typical installations at present include a line of 3 and 6 and 8 and 12 and 16 and 19 machines,—all synchronized as to feeds, speeds, etc. The proven results of this type of flat line polishing before forming has been astonishing,—both as to increased production and decreased costs. This type of equipment is offered in 6" multiple widths up to 60". "Hill" 2-Roll Abrasive Belt Grinding and Polishing Machines are also built in two other types; one for processing sheets of ferrous or non-ferrous metal, and the other for processing strip in coil form. Details will be cheerfully furnished for any of the three companion types of endless abrasive belt grinding and polishing machines for processing flat surfaces.

THE HILL ACME COMPANY

6400 BREAKWATER AVENUE • CLEVELAND 2, OHIO

"HILL" GRINDING AND POLISHING MACHINES • HYDRAULIC SURFACE GRINDERS • ALSO MANUFACTURERS OF "ACME" FORGING THREADING • TAPPING MACHINES • "CANTON" ALLIGATOR SHEARS • PORTABLE FLOOR CRANES • "CLEVELAND" KNIVES • SHEAR BLADES

Another feather in Houdaille's hat

the HOUDAILLE* HUSKY

A BRAND NEW HEAVY-DUTY

DIRECT-ACTING SHOCK ABSORBER

Here's the Houdaille Husky—another first for Houdaille engineers!

This new Houdaille is *the only heavy-duty, direct-acting shock absorber that is interchangeable with standard-size units and fits present production installations without sacrifice in collapsed or extended length.* No special drilling—no special fittings or brackets are necessary.

With its huskier parts and 50% greater fluid content, this new instrument affords low-pressure operation for easier riding and longer life under normal conditions. Where extra control is needed in modern suspensions, it has the strength and capacity to provide it without undue strain or wear.

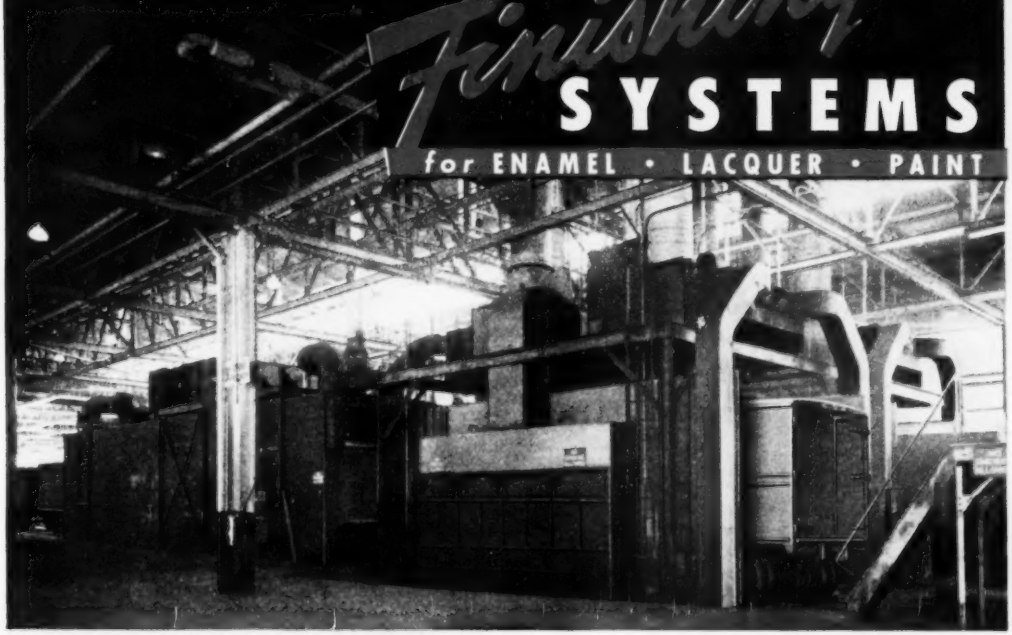
Our engineers will be glad to discuss the appplication of Houdaille Huskies with the builders of passenger cars, trucks or buses.

*Say "Hoo-dye"

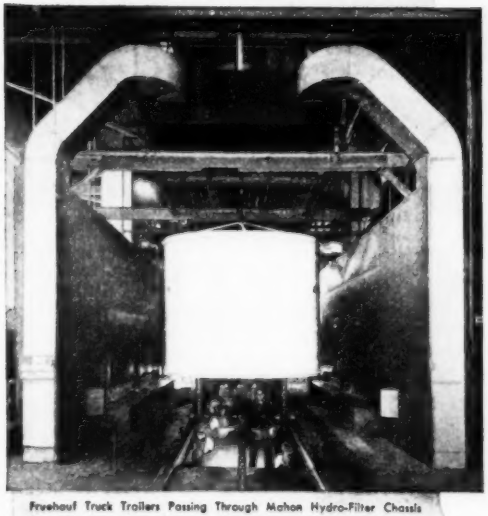
HOUDAILLE-HERSHEY CORPORATION
HOUDE ENGINEERING DIVISION
BUFFALO 11, NEW YORK
America's Pioneer Builder of Hydraulic Shock Absorbers

COMPLETE *Finishing* SYSTEMS

for ENAMEL • LACQUER • PAINT



Finish Coat Hydro-Filter Spray Booths and Baking Ovens on Two Finishing Production Lines 1750 Ft. Long—Part of a Complete Mahon Finishing System in Fruehauf's New Plant, Avon Lake, Ohio.



Fruehauf Truck Trailers Passing Through Mahon Hydro-Filter Chassis Spray Booth on One of the Production Lines at the Avon Lake Plant

. . . *Better Finish at LOWER COST with Modern Finishing Equipment!*

In any industrial plant where finishing constitutes a major operation, a modern, well planned Finishing System is essential to low-cost production . . . the equipment must be properly planned, and properly engineered and co-ordinated with the general production scheme, in order to achieve minimum finishing cost per unit processed in every day operation. That is why initial capital outlay for equipment of this type is a secondary consideration . . . that is why you should take advantage of the broadest experience available when contemplating new Finishing Equipment for your plant. The Mahon organization offers you the benefit of their experience in pioneering development in this highly specialized field through the past twenty-eight years . . . an accumulated wealth of technical knowledge and practical know-how not available to you elsewhere. See Mahon's Insert in Sweet's Mechanical Industries File for complete information, or arrange consultation.

THE R. C. MAHON COMPANY

Home Office and Plant, Detroit 11, Mich. • Western Sales Div., Chicago 4, Ill.

Engineers and Manufacturers of Complete Finishing Systems—including Metal Cleaning and Chemical Preparation Equipment, Dry-off Ovens, Hydro-Filter Spray Booths, Filtered Air Supply System, Drying and Baking Ovens, and Paint Reclamation System. Also, Core Ovens, Hydro-Foam Dust Collectors, and many other Units of Special Production Equipment.

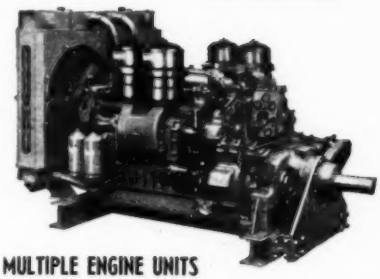
MAHON

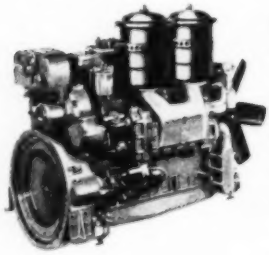
GENERAL MOTORS
Series 71 DIESEL ENGINES

GM GENERAL MOTORS DIESEL POWER

FOR GREATER DIESEL POWER IN A MORE COMPACT ENGINE, SPECIFY "G.M."

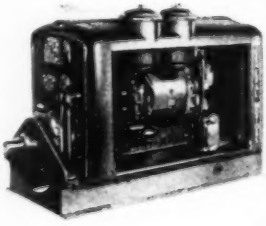
Here's the answer to your need for dependable, low-cost Diesel power—the General Motors Series 71 Diesel engine. Operating on the 2-cycle principle—power at every piston downstroke—this space-saving unit gives substantially more power per pound of weight, starts on its own safe fuel and runs smoothly and cheaply. It responds quickly to varying load demands, is easy to maintain. All engines available in either right or left-hand rotation.





POWER UNIT ENGINES

Power Unit Engines are available in 2, 3, 4 and 6-cylinder models. Right or left side mounting of blower, exhaust manifold and other components. Radiators, power take-offs, flywheel housing adaptors and other accessories may be purchased to adapt it to a variety of installations. Illustrated is Model 6045 C.



BASE MOUNTED POWER UNITS

Short base units are available in 2, 3, 4 and 6-cylinder models, enclosed or "open." Long base units with outboard shaft bearing in 3, 4 and 6-cylinder models. Complete instrument panels carry all necessary gauges in handy location. Structural steel bases; GM heavy-duty power take-off with clutch; quick electric starting. Illustrated is Model 6082 GM Diesel engine equipped with new compact General Motors torque converter.

MULTIPLE ENGINE UNITS

Two basic General Motors Series 71 Diesel engines compactly mounted side-by-side and geared to a single drive-shaft form the "Twin 4" or "Twin 6" Diesel. Each engine has an individual clutch and individual as well as synchronized throttle controls. Thus one or both may be in use or "cut out" as desired, giving extreme flexibility of operation. GM Series 71 Diesels also available in "Quad 6," consisting of four 6-cylinder engines mounted on one base and geared to a single shaft. "Twin 6," Model 12103 HD is illustrated.

Whatever your need for power, a GM Diesel "71" engine will fill it economically and dependably. Choose from single engines up to 130 *continuous duty* B.H.P., "Twins" to 260 or "Quads" up to 520. Write for the name and address of the dealer nearest you.

Engine	No. Cylinders	Bore and Stroke	Cylinder Displacement (Cu. In.)	BHP Industrial Models with Standard Equipment			Weight, Lbs. Industrial Engines
				Continuous at 1600 RPM	Max. at 1800 RPM		
					60 M.M. Injectors	7⅛ M.M. Injectors	
2-71	2	4¼" x 5"	142	43	49	58	1430*
3-71	3	4¼" x 5"	213	65	76	89	2000*
4-71	4	4¼" x 5"	284	87	103	120	2400*
6-71	6	4¼" x 5"	426	130	153	178	2800*
Twin 4	8	4¼" x 5"	568	170	203	236	5100‡
Twin 6	12	4¼" x 5"	851	260	300	349	5400‡
Quad 6	24	4¼" x 5"	1702	520	600	698	12065‡

*Weights shown are approximate for short base enclosed power units complete with all accessories.
‡Weight for complete unit including all accessories.

TORQUE CONVERTER UNITS NOW AVAILABLE!

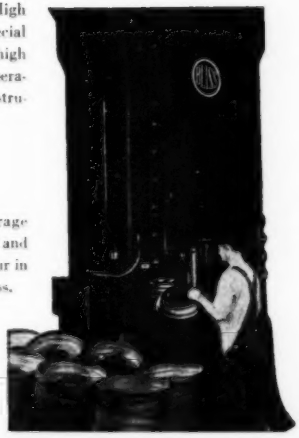
New General Motors Diesel engine-torque converter units are now available in Single 3, 4 and 6-cylinder "Twin 4" and "Twin 6" models. Here for the first time is a complete engine, torque converter and fluid coupling power unit built by one manufacturer with no divided responsibility. The unit produces torque multiplication of up to 4 to 1 for starting variable heavy loads. It also provides highly efficient transmission of power during light load periods by automatically shifting to fluid coupling. The fluid circuit prevents engine stalling under any load, and at the same time protects both engine and driven machinery from sudden shocks. *As shown in illustration at lower left, GM Diesel engine-torque converter unit takes up no more space than engine with conventional power take-off.*

DETROIT DIESEL ENGINE DIVISION ★ GENERAL MOTORS CORPORATION ★ DETROIT 28, MICHIGAN

Some of the many Stewart-Warner products that come off Bliss Presses.

...and at Stewart-Warner 318 BLISS PRESSES

One of a battery of 10 Bliss High Production Presses, with special fixed inclined legs, used for high speed blanking and forming operations in Stewart-Warner's instrument division.



Steel covers for Alemite garage service equipment are pierced and trimmed at rate of 115 per hour in this Bliss 300-ton enclosed press.

Just picture the range of different stamping problems involved in producing such a diversified line of products as speedometers, radios, lubrication service equipment, industrial gauges, car and aircraft heaters, and hardware. That's a sampling of Stewart-Warner's line. Then consider the variety of types and sizes of presses required.

It's one reason why a high proportion of Stewart-Warner's press equipment is Bliss-Built—high production presses, batteries of inclinables, enclosed presses and coining presses, among others.

Why does Bliss have such acceptance on this and so many other pressed-metal production lines?

Because Bliss' field-trained engineers first analyze a customer's production requirement, then help select the *right press for the job.* At Stewart-Warner, high production presses were recommended for certain large quantity stampings while knuckle joint presses were adapted for sizing and swaging. The result is a steady output of uniformly good stampings produced more economically and efficiently.

Let a Bliss sales engineer help you get the most out of your presses—mechanical or hydraulic. You'll be drawing on a fund of engineering knowledge developed over 90 years. And you'll see why "Bliss" on your press is more than a name—it's a guarantee. Send for him today.

E. W. BLISS COMPANY, DETROIT 2, MICHIGAN

Mechanical & Hydraulic Presses, Rolling Mills, Container Machinery

WORKS AT: Toledo, Cleveland, Salem, Ohio; Hastings, Mich.; Englewood, N. J.; Derby, England; St. Ouen sur Seine, France. SALES OFFICES AT: Detroit, Hastings, Mich.; New York, Rochester, N. Y.; Cleveland, Dayton, Toledo, Salem, Ohio; Philadelphia, Pittsburgh, Pa.; Chicago, Ill.; New Haven, Conn.; Windsor, Ont.

MARQUETTE · BLISS · CONSOLIDATED · TOLEDO

BLISS BUILT

BLISS BUILDS MORE TYPES AND SIZES OF PRESSES THAN ANY OTHER COMPANY IN THE WORLD

"This National Vulcanized Fibre Part solved our problem*— assured us a product which performed perfectly."

*Required:
A material light in weight, resistant to wear, with good dielectric strength, ready machinability. National Vulcanized Fibre with all these qualities, plus—was the perfect answer.

In your development of efficient, economical products, it pays to investigate

NATIONAL VULCANIZED FIBRE

A tough, horn-like material with high dielectric and mechanical strength. Excellent machinability and forming qualities, great resistance to wear and abrasion, long life, light weight. Sheets, Rods, Tubes, Special Shapes.

PHENOLITE Laminated PLASTIC

About one-half the weight of aluminum, possesses an unusual combination of properties—a good electrical insulator, great mechanical strength, high resistance to moisture; ready machinability. Sheets, Rods, Tubes, Special Shapes.

PEERLESS INSULATION

The *first* fish paper developed for electrical insulation. Strong, smooth, flexible, with excellent forming qualities. High dielectric strength. Sheets, Rolls, Coils.

To help you solve your specific development problem—National Research and Engineering Service available without obligation.

NATIONAL VULCANIZED FIBRE CO.
WILMINGTON DELAWARE
Offices in Principal Cities
Since 1873

3 TYPICAL REASONS WHY YOU TOO MIGHT FIND IT WORTH WHILE TO CONTACT CAMCAR

$200,000 SAVED

Radio manufacturer saved $200,000 in a single year by employing a part redesigned by Camcar for production by the cold upsetting process.

ONE PIECE INSTEAD OF *TWO*

Combining the two parts formerly used into a single integral unit. Cold upset production saved parts cost and assembling expense.

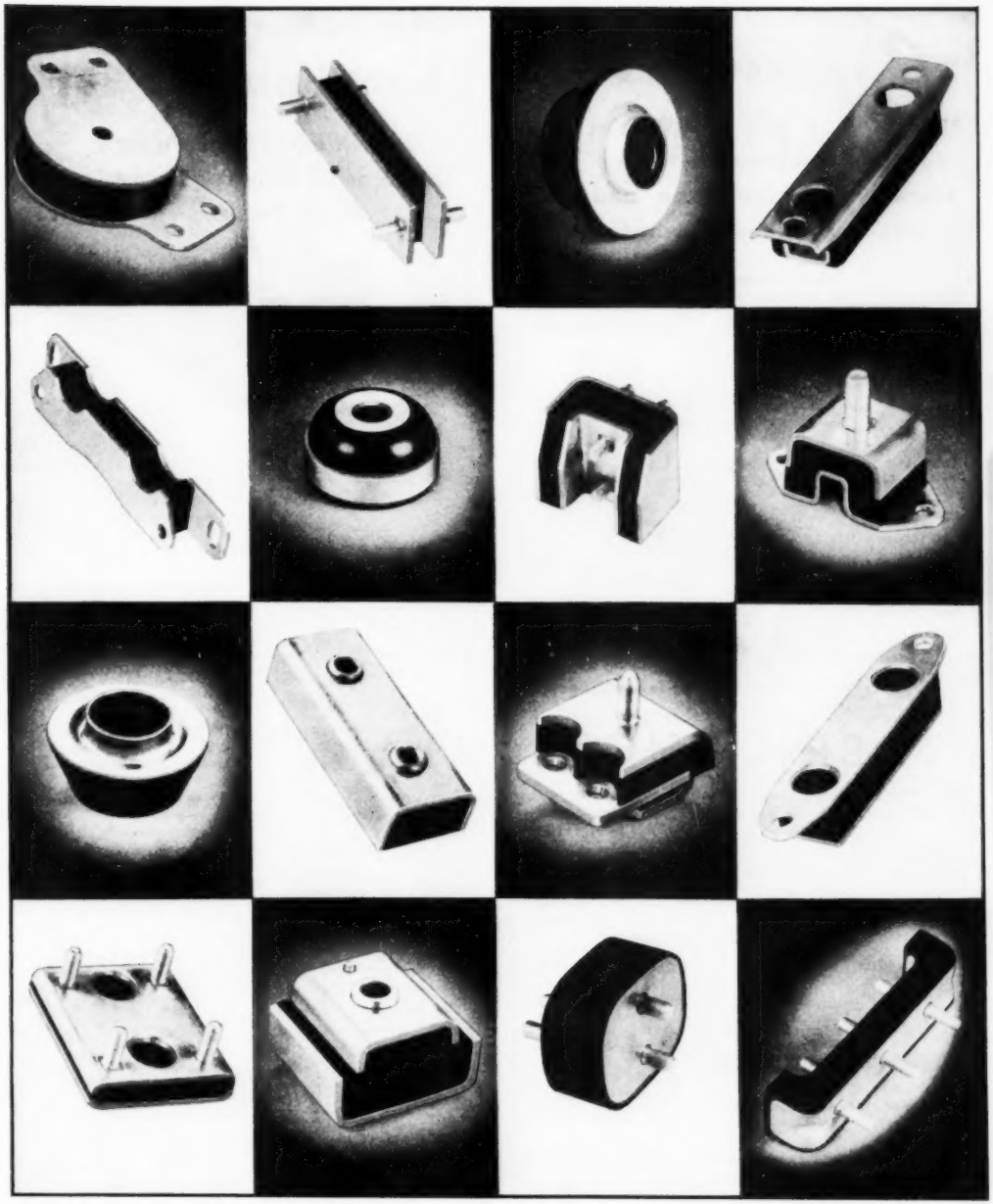
50% SAVED

Automobile manufacturer, cooperating with Camcar, was able to save 50% by modifying a design for production by cold upset methods.

ALSO . . . *manufacturers of:*

- ★ STAINLESS STEEL standard screws.
- ★ Sheet Metal Screws . . . steel and Stainless Steel.
- ★ Steel, Brass, Aluminum and Bronze Standard Machine and Cap Screws.
- ★ Sems and Sems-Phillips Head Screws.

CAMCAR PRODUCTS CO.
606 18TH AVENUE, ROCKFORD, ILLINOIS



MADE BY

U.S.RUBBER

SERVING THROUGH SCIENCE

ENGINEERED RUBBER PRODUCTS FOR THE AUTOMOTIVE INDUSTRY

FORT WAYNE
INDIANA

Brandywine FIBRE

Hard Vulcanized Tube and Rod offers you these advantages:

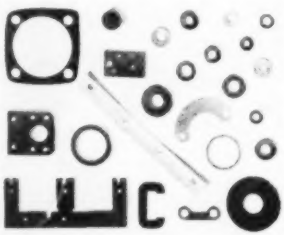
High Dielectric Strength
Arc Resisting (non-tracking)
Light Weight s.g. 140
Unaffected by Oil
Wear Resistant
Easily Machined
Formable
Meets NEMA specifications
Low Cost—Economical

Tube mill lengths run 32" to 36". Some sizes 42" to 45". Inside diameters ⅛" to 2", with 1/32" to 5/16" wall thickness. Round, square or hexagon I.D. Rod in 4 to 8 foot lengths.

Lathe Turned and Screw Machine Parts

FABRICATION

BRANDYWINE offers a Fabricating Department machining parts to your specifications and a modern Tool and Die Department to make any tools and dies for your parts without delay.



Laminated Phenolic and Vulcanized Fibre Parts

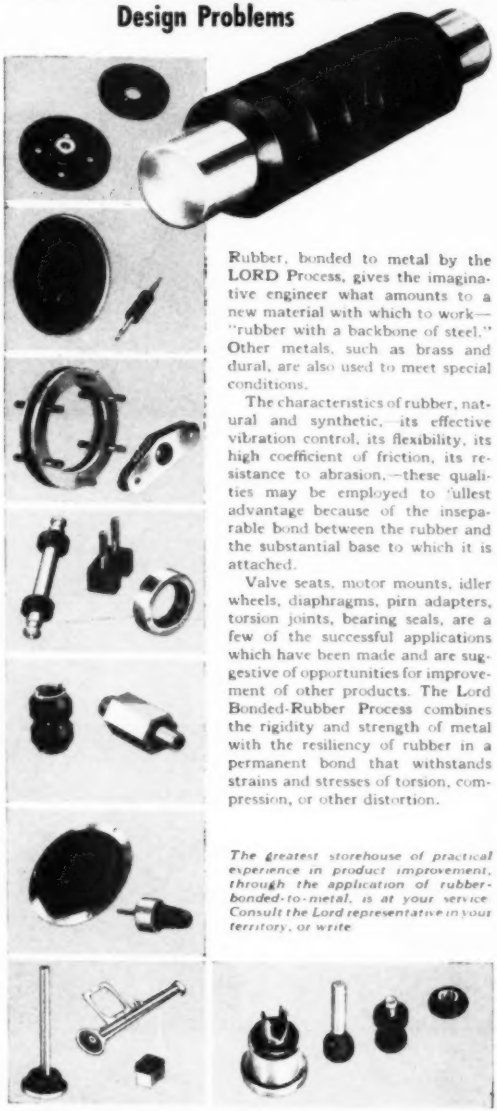
Stamped, Machined, Formed and Automatic Screw Machine Parts in:
Laminated Phenolic Fibre
Vulcanized Fibre, Hard and Forming Grade.
Resin and Acetate Laminates
Electrical Kraft and Pressboard
Hard and Soft Rubber
Soft Metal for Gaskets

Your blueprint and inquiry will bring our prompt price and delivery. May we have the opportunity of quoting you?

Brandywine
Fibre Products Company
1435 Poplar Street Wilmington 99, Del.

RUBBER . . . with a backbone of STEEL

LORD BONDED-RUBBER Products Solve Some of Industry's Toughest Design Problems



Rubber, bonded to metal by the LORD Process, gives the imaginative engineer what amounts to a new material with which to work—"rubber with a backbone of steel." Other metals, such as brass and dural, are also used to meet special conditions.

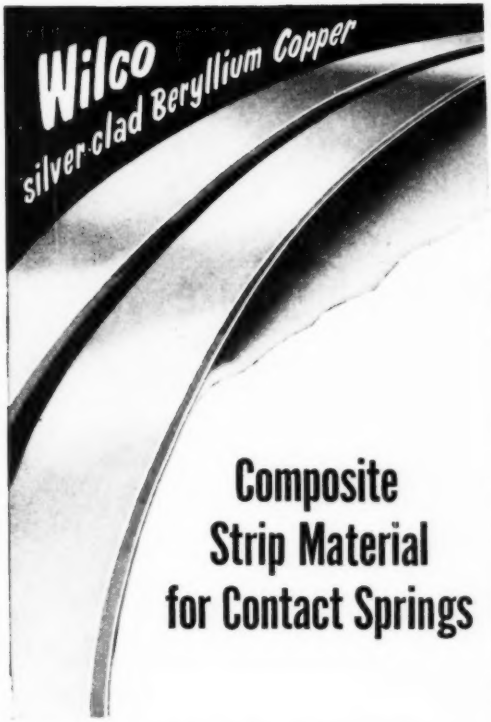
The characteristics of rubber, natural and synthetic,—its effective vibration control, its flexibility, its high coefficient of friction, its resistance to abrasion,—these qualities may be employed to fullest advantage because of the inseparable bond between the rubber and the substantial base to which it is attached.

Valve seats, motor mounts, idler wheels, diaphragms, pirn adapters, torsion joints, bearing seals, are a few of the successful applications which have been made and are suggestive of opportunities for improvement of other products. The Lord Bonded-Rubber Process combines the rigidity and strength of metal with the resiliency of rubber in a permanent bond that withstands strains and stresses of torsion, compression, or other distortion.

The greatest storehouse of practical experience in product improvement, through the application of rubber-bonded-to-metal, is at your service. Consult the Lord representative in your territory, or write.

LORD MANUFACTURING COMPANY, ERIE, PA.
Canadian Representative: Railway & Power Engineering Corp. Ltd

LORD Vibration Control Systems



Composite Strip Material for Contact Springs

WILCO SILVER OVERLAY on BERYLLIUM COPPER is one of the newer WILCO materials designed and produced to reduce fabrication problems on contact spring assemblies.

PREFERRED . . . because 1. It is comprised of a silver contact surface permanently bonded to Beryllium Copper, which can be heat-treated in the normal manner to bring about its excellent spring properties.

2. It increases the permissible thermal and electrical limits.

3. Available with one or both faces silver clad, in standard thicknesses and widths, soft or cold-rolled tempers, or finish heat-treated to maximum spring properties. Also available as fabricated parts made to your most exacting requirements and specifications.

The **WILCO** Sales and Engineering Departments are prepared to recommend the proper application of this and other WILCO products to manufacturing customers' individual needs. WRITE FOR A WILCO ENGINEERING DATA BULLETIN which gives more complete technical information.

WILCO PRODUCTS INCLUDE: THERMOSTATIC BIMETALS: All temperature ranges, deflection rates and electrical resistivities. ELECTRICAL CONTACTS: Silver, Platinum, Tungsten, Alloys, Sintered Powder Metal. SILVER CLAD STEEL: For industrial use. NI-SPAN C* Constant Modulus alloy: JACKETED WIRE: Silver on Steel, Copper, Invar and many other combinations. SPECIAL ALLOYS: Including high conductivity, high strength Copper Alloys. ROLLED GOLD PLATE AND GOLD FILLED WIRE.

*Reg. Trade Mark, The International Nickel Co., Inc.

THE H. A. WILSON COMPANY
105 CHESTNUT STREET, NEWARK 5, NEW JERSEY
Branch Offices: Chicago, Detroit, Los Angeles, Providence

WILCO

SPECIALISTS FOR 34 YEARS IN THE MANUFACTURE OF THERMOMETALS - ELECTRICAL CONTACTS - PRECIOUS METAL BIMETALLIC PRODUCTS AND SPECIAL ALLOYS

Which came first?

TUNG-SOL has worked with the automotive industry so closely and so long, that it is hard to determine which comes first, the need for a new type automotive lamp or a new TUNG-SOL Lamp to satisfy a need. Because of their uniform high quality, TUNG-SOL Lamps have been used for initial equipment and replacements since electricity replaced oil for automotive lighting. When ordering always specify dependable TUNG-SOL Lamps for every car, truck and bus.

TUNG-SOL
AUTO LAMPS

TUNG-SOL LAMP WORKS INC., NEWARK 4, N. J., Sales Offices: ATLANTA • CHICAGO • DALLAS • DENVER • DETROIT • LOS ANGELES • NEWARK • PHILADELPHIA
ALSO MANUFACTURERS OF RADIO AND TELEVISION TUBES AND CURRENT INTERMITTORS

One of a series *of messages to help you increase your understanding of business paper advertising, and its effect on your job.*

Why you have a big stake in your company's advertising

NO MATTER WHAT your present job may be, your chances of getting ahead depend on your company's ability to make a fair profit.

As a production man, you have a pretty good idea of how profits are earned. You know that without modern, high-speed production tools, there wouldn't *be* any profits — or any jobs, for that matter. Your cost-per-unit would be so high that you couldn't compete with other manufacturers in your market.

The same thing applies to the *manufacture of a sale!* Without mechanization, the cost of "manufacturing" would be prohibitive.

That's where advertising comes into the picture. Because advertising is simply the assembly-line technique in selling. Just consider the five basic operations involved —

1. **Seeking out prospects**
2. **Arousing their interest**
3. **Creating a preference for your product**
4. **Making a specific proposal**
5. **Closing the order**

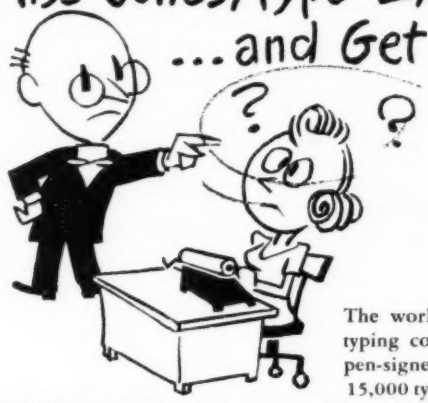
Advertising performs the first three of these jobs. And it performs them *far more economically* than any other means, leaving your salesmen free to concentrate on the two that they alone can do, and do best. In that way, advertising increases your company's chance to earn a profit. And that is why you have a big stake in its *efficient use.*

Where can your company's advertising work at its highest efficiency? Where but in those business papers which are concentrated among your company's best prospects — *and no one else!*

AUTOMOTIVE INDUSTRIES

is a member of The Associated Business Papers, who have published an interesting folder entitled, "10 ways to measure advertising effectiveness." We'll be glad to send you a copy. And if you'd like reprints of this advertisement (or the entire series) to pass along to others in your organization, just say the word.

"Miss Jones, Type 2,500 Personal Letters ...and Get 'em Out Today!"



Do you want *real response* from your customers and prospects? *A personally-typewritten letter gets the highest results!*

But you don't have the time, or facilities? And you can't afford the expense of hiring 30 typists? R. L. Polk & Co.'s Automatic Typewriter Division has the answer for you!

The world's largest battery of automatic typewriters—typing completely personalized letters, each individually pen-signed—can produce 500 or 15,000 typewritten letters for you, READY TO MAIL—in a matter of hours. *And the cost is a fraction of what it would cost you to do it yourself.*

Simply send along your list, your letterheads and envelopes, your instructions. Or, ask for complete information from:

R.L. POLK AND COMPANY, Direct Mail Advertising Division
HEADQUARTERS: POLK BUILDING, 431 HOWARD ST. DETROIT 31, MICHIGAN
BRANCHES AND PRODUCTION PLANTS: New York Chicago Philadelphia Cleveland St. Louis Cincinnati Trenton

FITZGERALD

GASKETS
GREASE RETAINERS
OIL SEALS
GASKET PACKING MATERIALS

•

Gasket Craftsmen
for 43 years
Gaskets of all types and materials

•

The
FITZGERALD MANUFACTURING CO.
TORRINGTON, CONN.
Branches at Chicago and Los Angeles
Canadian FITZGERALD Limited, Toronto

FITZGERALD
SINCE 1906 **GASKETS**
THE COMPLETE LINE THAT COMPLETELY SATISFIES

FOR BUS, TRUCK, AND TRACTOR APPLICATIONS

GENERAL CONTROLS

hi-g* VALVES

PV-1

Normally closed shut-off valve of the electro-magnetic type—various magnet sizes—full ported or restricted parts—for all types of fluid, gasoline, air, water, oils, etc.

PV-9

Pilot Piston valve for medium and high pressure applications. Normally open and normally closed types. Controls hydraulic oils, fuels, lubricating oils, water, etc. 50 to 3000 P.S.I. operating pressure.

PV-16

Electric motor valve, suitable for fuel, hydraulic fluid and lubricating oil shut-off. High flows at low pressure drop, explosion-proof motor and switch cover.

PV-11

Three-way Electro-Magnetic valve used for distribution of fluid flow or for "feed in" and "exhausting" fluid from a cylinder, piston or vessel.

PV-7

Four-way selector type control-operating pressure up to 3000 P.S.I. for control of fluid pressure operated cylinders.

PV-2

Same as PV-1 except is normally open type. For control of various fluids, oil, water, gasoline, air, etc.

GENERAL CONTROLS
Manufacturers of Automatic Pressure, Temperature and Flow Controls.
FACTORY BRANCHES: BIRMINGHAM (3), BOSTON (16), CHICAGO (5), CLEVELAND (15), DALLAS (2), DENVER (10), DETROIT (8), GLENDALE (1), HOUSTON (2), KANSAS CITY (2), NEW YORK (17), PHILADELPHIA (40), PITTSBURGH (22), SAN FRANCISCO (7), SEATTLE (1). DISTRIBUTORS IN PRINCIPAL CITIES.

AUTOMOTIVE INDUSTRIES

Presents the News

Automotive Industries is the industrial news magazine of the great industries it serves. No other publication even attempts to compete with it in the presentation of what is NEW and what is NEWS to the interrelated departments, divisions and personnel in the plants where it penetrates to the farthest corners . . . reaches those who buy and influence the buying that amounts to billions of dollars every year.

It abounds with news of new developments in design and engineering, latest disclosures in production methods, over-all industrial news of the industry which appeals to the top administrative, engineering and production executives.

The subscription renewal rate 80.76% (December 31, 1948) of this leading automotive industrial news magazine indicates its popularity. ***There is no other magazine like it.***

AUTOMOTIVE INDUSTRIES

A CHILTON Publication

Chestnut and 56th Streets Philadelphia 39, Penna.

THEY **LOCK** BECAUSE THEY'RE **KNURLED**

(A)

Pat'd. & Pats. Pend.

"UNBRAKO" KNURLED CUP POINT SET SCREW

(B) Pat'd.

"UNBRAKO" KNURLED THREAD SET SCREW

UNBRAKO

Reg. U. S. Pat. Off.

SELF-LOCKING
SOCKET SET SCREWS

Set Screws must "*stay put*". To make sure they do—Lock Them!

Yes, no matter what your set screw application may be—there's an "UNBRAKO" Self-Locking Set Screw to lock your requirements, because all patented "UNBRAKO" Set Screws are made SELF-LOCKING through KNURLING.

(A) The patented Knurled Cup Point of this popular "UNBRAKO" Socket Set Screw makes it a Self-Locker, because the edges of the counter-clockwise knurls positively prevent creep, regardless of the most chattering vibration.

(B) The patented Knurled Thread of this "UNBRAKO" Socket Set Screw is swaged,—making it a most excellent Self-Locker for applications requiring cone, oval, flat or other points except cup, and for use with hardened shafts.

Knurling of Socket Screws originated with "Unbrako" in 1934.

Write us for the name and address of your nearest "UNBRAKO" Industrial Distributor and for your copy of the "UNBRAKO" Catalog.

OVER 46 YEARS IN BUSINESS

STANDARD PRESSED STEEL CO.

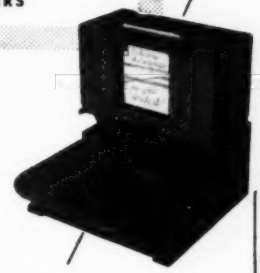
JENKINTOWN, PENNSYLVANIA, BOX 611
CHICAGO • DETROIT • ST. LOUIS • SAN FRANCISCO

PRODUCTION LINE PERFECTION

WITH

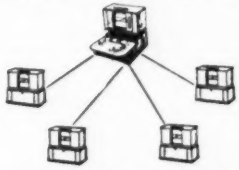
TelAutograph

TELESCRIBERS



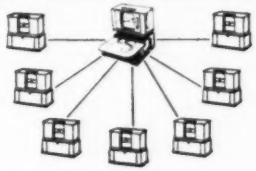
TelAutograph Telescriber Systems insure absolute production control in the Body Plant and on the Final Assembly Line.

IN THE BODY PLANT



Cut and Sew, Glass, Cushion, Paint simultaneously receive written, coded instructions from Control Desk.

IN FINAL ASSEMBLY



Receiving Department transmits handwritten orders to all Final Assembly sections: Chassis—Motor—Axle—Wheels—Hood—Fenders, etc. Each section knows in advance what special items will be needed at a particular time.

TelAutograph Telescriber Systems—the "nerve center" of controlled production through split second scheduling.

Details are yours for the asking. Write for literature A.

TelAutograph

CORPORATION

16 W. 61 STREET, NEW YORK 23, NEW YORK

HARDNESS TESTING

The **STANDARD SCLEROSCOPE** (Now highly Improved) for more than twenty years has made good and is still used for doing the world's hard work in testing. In general use for specifications purposes. Simple, Sturdy, Comparatively Inexpensive. Illustrated bulletins free. **FOR QUALITATIVE AND QUANTITATIVE HARDNESS MEASUREMENT,** under Static Pressure, the **MONOTRON** is the only machine now available. Operative up to over 2000 Diamond Brinell. Avoids errors due to spring in test pieces. Takes readings with the load on, avoiding reversal lash errors. No setting to zero. Operates at highest Speed. Has solved many old laboratory and shop problems. *We also make the Durometer for testing the hardness of rubber.* Comprehensive bulletins free.

THE SHORE INSTRUMENT & MFG. CO.
Van Wyck Ave. and Carll St., Jamaica, New York, N. Y.
Agents in all Foreign Countries

WORCESTER STAMPED METAL © **QUALITY STAMPINGS** WORCESTER STAMPED METAL ©

Heavy, medium and light stampings in any quantity.
A steady flow of production . . . *when* you want it.

WORCESTER STAMPED METAL CO., 9 HUNT STREET, WORCESTER, MASS.

A NON-DRYING High-Spotting Blue Paste Saves Time and Labor

As it does not dry out, it remains in condition on work indefinitely, hence **saves** the scraper's time. Intensely blue paste can be spread thin; transfers clearly. 50¢ per tube. 45¢, 2 or more. Ask your dealer, order from this Ad, or write for FREE Trial Tube!

DYKEM
HI-SPOT BLUE NO. 107

The DYKEM CO., 2301L North 11th St., St. Louis 6, Mo.
In Canada: 2466 Dundas St., West, Toronto, Ont.

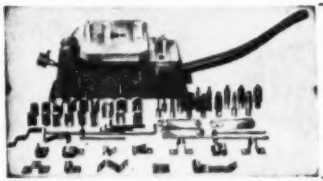
Export

Sixty year old Import Export House with old established world-wide connections interested in adding a few additional lines for distribution in foreign markets. Address reply to Box 61, Automotive Industries, 5601 Chestnut St., Philadelphia 39, Pa.

SPRINGS

"Measurably Better"
Service Springs
FOR ALL CARS AND TRUCKS

SERVICE SPRING COMPANY • INDIANAPOLIS 6, INDIANA



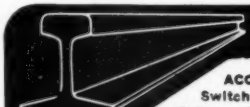
RICHARDS

MULTIFORM
BENDER-CUTTER
4-IN-ONE
Angle Bending
Circle Bending
Cutting, Punching
Kalamazoo 60F, Mich.

SHIPPERS report savings of $600 a year with Marsh Stencil Machines, Brushes, Inks! Electric and Hand Operated machines cut ½", ¾", 1" letters. For sample stencil, Shippers' Handbook, prices, pin this to business letterhead with your name.

MARSH STENCIL MACHINE CO.
41 Marsh Bldg. • Belleville Ill., U. S. A.

MARSH
STENCIL MARKING



RAILS

NEW AND RELAYING
TRACK MATERIALS AND ACCESSORIES CARRIED IN STOCK
Switch Material • Spikes and Bolts • Track Tools • Ties • Tie Plates • Bumpers • Complete Side Tracks

BUILDERS STEEL SUPPLY CO. 4261 WYOMING AVE DEARBORN, MICH.

WILLIAMS

DROP-FORGINGS

ANY SHAPE • ANY MATERIAL • COMPLETE FACILITIES
Write for Free Forging Data Folder . . . Helpful, Informative
J. H. WILLIAMS & CO., "The Drop-Forging People" BUFFALO 7, N.Y.

AUTOMOTIVE INDUSTRIES

Penetrates into Leading Plants

in the

Automotive and Aircraft Industries

Opportunity *for*

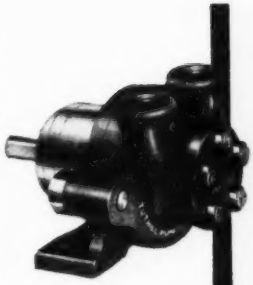
TOP FLIGHT ENGINEERS

WITH AERONAUTICAL EXPERIENCE

Pioneers in the Research, Development, Design and Production of Tandem Rotor Helicopters offers exceptional opportunity for engineers experienced in Aircraft Design . . . Mechanical Design . . . Stress Analysis . . . Project Work . . . Vibrations . . . Flight Test and Instrumentation.

Ambitious, progressive men with above experience requested to write at once giving age, education and experience to—

PIASECKI
HELICOPTER CORP.
Morton, Pa. (Philadelphia Suburb)



IN PRESSURE LUBRICATION

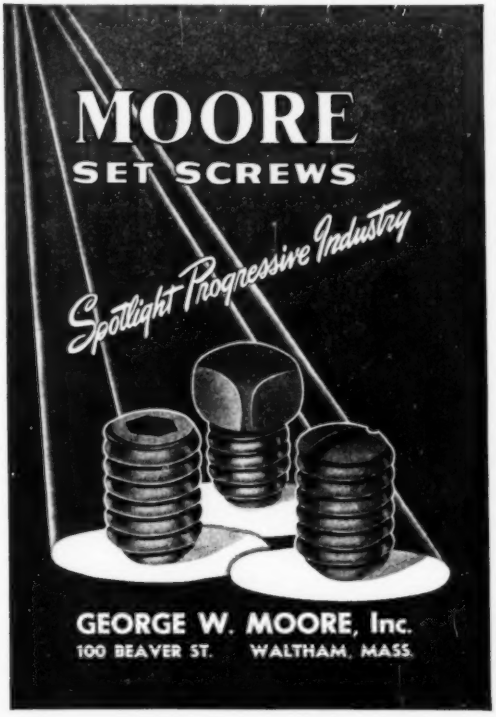
ON HYDRAULIC MECHANISMS

FOR FUEL OR LIQUID TRANSFER

THIS SMALL PUMP CAN DO BIG THINGS FOR YOU

It's the Tuthill Model L . . . a positive displacement, internal-gear rotary pump with the famous Tuthill mechanical seal. Capacities up to 3 g.p.m. at pressures to 400 p.s.i. Ring or foot mounting. Many porting arrangements. Write for Model L bulletin.

TUTHILL PUMP COMPANY
939 East 95th Street, Chicago 19, Ill. Phone: REgent 4-7420



G&O
Radiators
84th Year

AUTOMOTIVE and AVIATION

ENGINE COOLING RADIATORS

•

OIL COOLERS

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THE G&O MANUFACTURING CO.
NEW HAVEN CONNECTICUT

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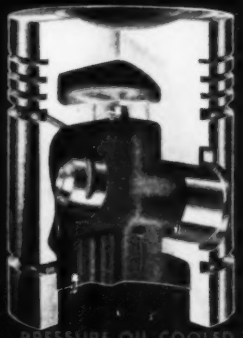
CONDUCTION COOLED



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SERRATED FINISH

COMPLETE
ENGINEERING COOPERATION

TAILOR-MADE PISTONS FOR YOUR DIESEL ENGINE

Original Equipment in America's Finest Motors

WAUKESHA	MARMON-HERRINGTON
HERCULES ENGINES	GMC
MACK	FWD
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PISTON EQUIPMENT *for* INTERNAL COMBUSTION ENGINES —BOTH GASOLINE AND DIESEL

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An edge provides more traction than a point. That principle applied to *multiple* wide chisel edges gives EverLOCK Washers their unmatched ability to hold against vibration, strain, expansion and contraction.

EverLOCK's multiple chisel edges are forced into the contiguous faces of both work and nut by powerful spring tension, assuring full use of the added gripping area.

EverLOCKS can be applied rapidly and easily . . . cut assembly time and labor costs . . . eliminate all hazards of stretched bolts and distortion of threaded parts. Write for full particulars.

EverLOCK WASHERS

THE WASHER THAT HAS THE EDGE

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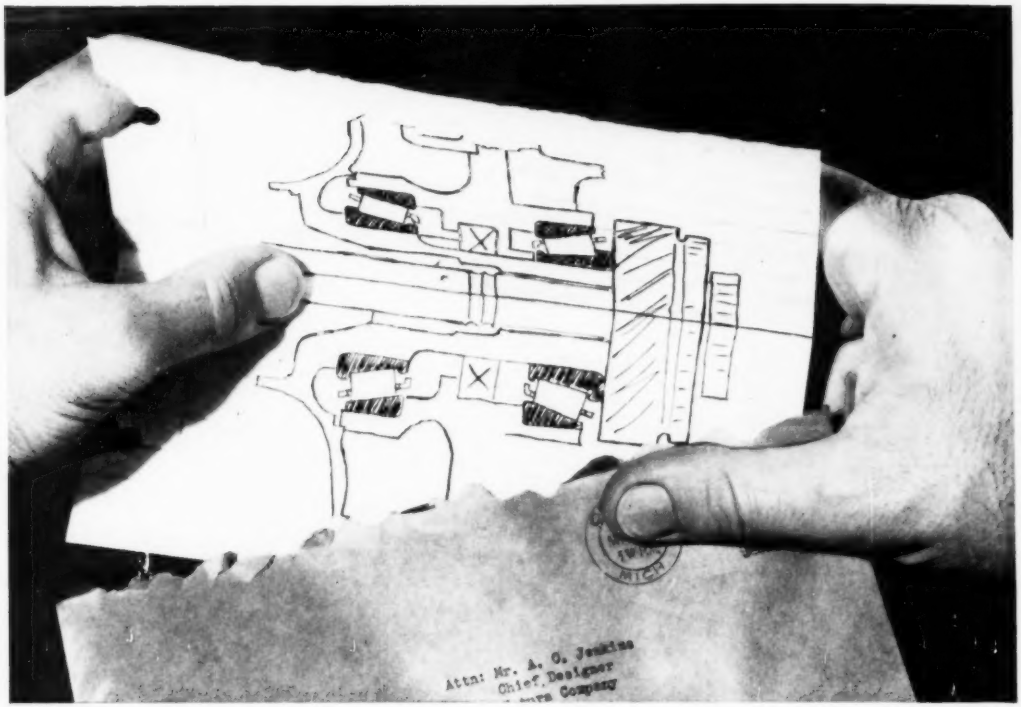

Open letter to anyone working on a secret transmission

IF a new transmission is secretly taking shape on your drawing boards here's an idea to consider before you go any further: No matter how you plan to convert power, it's possible to get longer transmission life and quieter operation by using Timken® tapered roller bearings!

Incorporating Timken bearings into the design of your transmission now is a quick, simple, inexpensive way to help insure its success later.

Timken bearings help prevent shaft deflection and end-movement. Line contact between bearing rolls and races keeps shafts rigidly in line—tapered construction enables Timken bearings to take *both* radial and thrust loads in any combination. And if there are gears in the picture, Timken bearings will assure smoother meshing, less wear on moving parts.

Timken bearings keep designs simple, too. Higher load capacity lets you use smaller bearings and save on space. No special thrust bearings or washers needed. And because you can make precise and permanent adjustment at installation, Timken bearings permit wider tolerances of surrounding parts.

For a quick idea of what Timken bearings can do for transmissions look what they're doing for your pinion! The pinion bearing has the toughest job of any bearing in the automobile. And ALL BUT TWO MAKES OF PASSENGER CARS NOW USE TIMKEN BEARINGS ON THE PINION!

For nearly 50 years Timken bearings have given trouble-free operation in wheels, pinions, differentials, steering parts and axles. Feel free to use our engineering facilities when designing new bearing applications. In Detroit, phone TRinity 5-1380. The Timken Roller Bearing Company, Canton 6, Ohio. Cable address: "TIMROSCO".

NOTE TO P. A.'s *Because every step of the manufacture of Timken bearings is controlled within our company... because our vast manufacturing facilities are widely dispersed... you will find The Timken Roller Bearing Company a supply source of outstanding reliability.*

TIMKEN

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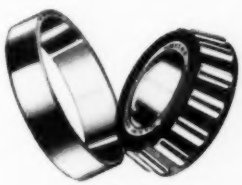
TAPERED ROLLER BEARINGS



NOT JUST A BALL ◯ NOT JUST A ROLLER ▭ THE TIMKEN TAPERED ROLLER ▭ BEARING TAKES RADIAL ◫ AND THRUST ◫ LOADS OR ANY COMBINATION